CONTRIBUTIONS FROM THE UNIVERSITY
OF MICHIGAN HERBARIUM, NO. 6

STUDIES OF AMERICAN SPERMATOPHYTES—I

BY

CYRUS LONGWORTH LUNDELL

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ALTHOUGH the botanical exploration of Mexico and Central America has progressed steadily during the past four decades, there still remain large regions, such as the interior of Chiapas, which have scarcely been touched. Until recently very little has been known about the flora of any part of the state of Tabasco. Although Yucatán has been worked extensively by resident and visiting botanists, the xerophytic coastal zone as well as areas of relict deciduous forest in the interior needs further intensive exploration. New plants are brought to light by every collection of importance. Additional material, even of many well-known species, is necessary for their reinterpretation. Along with critical notes and necessary transfers, fifty-six novelties are now described; most of these are from the Yucatán Peninsula and the highlands of Chiapas.

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Types and other critical specimens have been borrowed from the U. S. National Herbarium, Gray Herbarium, the Herbarium of the University of California, and the Herbarium of Field Museum. To Dr. W. R. Maxon, Dr. L. B. Smith, Dr. H. L. Mason, and Mr. C. C. Gregg the writer expresses his thanks for the loans.

Rhodospatha nervosa Lundell, sp. nov.—Caulis scandens. Folia glabra; petiolus ad geniculum vaginatus; lamina ovato-oblonga, apice abrupte cuspidata, basi rotundata, venis primariis lateralibus ca. 40. Pedunculus 15 cm. longus, 4 mm. diam. Spadix cylindricus, 11.5 cm. longus, 1.1 cm. diam., stipite 1 cm. longo et 3.5 mm. diam. suffultus. Stamina 3–4.5 mm. longa. Ovarium ca. 2 mm. longum.

A scandent epiphyte. Leaves membranaceous, ovate-oblong, about 47 cm. long, 21 cm. wide, apex abruptly cuspidate, base

rounded, slightly decurrent, costa nearly plane above, elevated beneath, primary veins about 40 on each side, prominent on the undersurface, the secondary veins and veinlets conspicuous beneath; petiole broadly winged below, the wings extending to base of geniculum, the geniculum about 2.5 cm. long. Peduncle of flowering spadix slender, about 4 mm. in diameter, 15 cm. long. Spathe deciduous, not seen. Stipe of spadix slender, 1 cm. long, about 3.5 mm. diameter. Spadix (in flower) cylindrical, 11.5 cm. long, 1.1 cm. in diameter medially. Stamens 3 to 4.5 mm. long; anthers about 1.2 mm. long. Ovary about 2 mm. long, with numerous ovules; style subequaling ovary; stigma elevated.

British Honduras: Stann Creek District, Middlesex, in high ridge on hilltop, May 25, 1939, *Percy H. Gentle 2797* (type in the University of Michigan Herbarium).

The large stamens (3 to 4.5 mm. long), ovary 2 mm. long, slender stipe of spadix, and the numerous primary veins of the leaves are characteristics which amply distinguish *R. nervosa* from *R. heliconiifolia* Schott and other related species of the group with petiole vaginate to base of geniculum.

Spathiphyllum lacustre Lundell, sp. nov.—Foliorum petioli usque ad 50 cm. longi, vaginati, geniculum ca. 5 cm. longum. Lamina oblongo-lanceolata, apice cuspidata, basi anguste rotundata. Spatha lanceolato-elliptica. Spadix usque ad 9 cm. longus. Tepala 4, 5, vel 6, oblonga, ca. 3 mm. longa, usque ad 2.5 mm. lata, truncata. Stamina 4, 5, vel 6.

A coarse herb. Petiole up to 50 cm. long, vaginate to above the middle; geniculum about 5 cm. long. Leaf blade oblong-lanceolate, up to 70 cm. long, 19 cm. wide, apex cuspidate, base narrowed and rounded, not decurrent, the lateral veins numerous. Peduncle up to 90 cm. long, exceeding petiole. Spathe lanceolate-elliptic, up to 25 cm. long, 11 cm. wide, apex cuspidate, base acute. Stipe of the spadix about 4 cm. long, adnate to the spathe to above the middle. Spadix in flower up to 9 cm. long, 1.5 cm. diameter. Tepals 4, 5, or 6, free, oblong, up to 3 mm. long, 2.5 mm. wide, truncate. Stamens 4, 5, or 6; filaments oblong, flat, subequaling tepals; anthers oblong, about 1.4 mm. long, emarginate. Ovary and style

together about 7.5 mm. long; ovary about 3 mm. long, 3-celled, with 2 or 3 ovules in each cell, the ovules in 2 series, the pairs collateral. Style conical, striate, exserted about 4.5 mm.

MEXICO: Tabasco, lakeside at Ojo de Agua near Balancan, May 9 to 14, 1939, *Eizi Matuda 3136* (type in the University of Michigan Herbarium).

The species is anomalous in that the tepals and stamens vary in number from 4 to 6; there are 4 or 5 tepals in the flowers at the apex of the spadix, 5 or 6, usually 6, in those on the basal two-thirds of the spadix. Usually, there are 2 collateral ovules in 2 cells of the ovary, 3 ovules in 2 series in the third cell. *S. lacustre* obviously belongs to the section Euspathiphyllum Engl., for its relationship is with *S. Kochii* Engl. & Krause.

Dioscorea belizensis Lundell, sp. nov.—Caules volubiles, ad 6 mm. crassi, glabri, striati. Folia alterna, petiolata, chartacea, supra glabra, bullata, subtus villosa, late ovata, ad 22 cm. longa, 17 cm. lata, apice abrupte cuspidata, basi late cordata, 11-nervia. Inflorescentiae ♂ usque ad 150 cm. longae, paniculatae, axillares, solitariae, floribus solitariis, breviter pedicellatis, bracteis ovatis, abrupte cuspidatis; perianthium parce lepidotum, tubo ca. 1.5 mm. longo, lobis reflexis, late ovatis, 2 mm. longis. Stamina 6, ca. 0.7 mm. longa.

A vine with thick underground roots, stems striate, up to 6 mm. in diameter. Petioles 6.5 to 10.5 cm. long, sparsely lepidote, striate. Leaf blades thinly chartaceous, glabrous above, short villous beneath, broadly ovate, up to 22 cm. long, 17 cm. wide, apex abruptly cuspidate, base deeply cordate with a broad open sinus, 11-veined, the veins and veinlets impressed above, the upper surface bullate, the primary veins prominent beneath, the veinlets conspicuous, reticulate. Staminate inflorescence axillary, solitary, up to 150 cm. long, a narrow panicle of racemes, the peduncle and rachis striate, at first obscurely papillate and sparsely lepidote; the racemes up to 7.5 cm. long; bractlets subtending flowers broadly ovate, abruptly cuspidate, up to 2 mm. long. Pedicels (flower stipes) about 1 mm. long, sparsely lepidote. Flowers dark red; perianth tube about 1.5 mm. long, sparsely

lepidote, the lobes broadly ovate, 2 mm. long. Stamens 6; filaments thick, about 0.5 mm. long; anthers introrse, scarcely wider than filaments, about 0.2 mm. long. Ovary abortive. Pistillate flowers and fruits unknown.

British Honduras: Stann Creek District, Carib Reserve, in *acahual*, Sept. 20, 1939, *Percy H. Gentle 2998* (type in the University of Michigan Herbarium), a vine, flowers dark red; Carib Reserve, in *acahual*, Nov. 10, 1939, *Gentle 3087*, a vine, flowers dark red, vernacular name, *wild yam;* Silk Grass Creek Reserve, in *acahual*, Dec. 5, 1939, *Gentle 3117*, a vine, vernacular name, *wild yam.*

The species is noteworthy for its exceptional staminate inflorescence which reaches a length of more than 5 feet.

Trophis chiapensis Brandeg., *Univ. Calif. Publ. Bot.*, 6: 178. 1915.

Mexico: Chiapas, Cerro del Boqueron, Sept., 1913, *C. A. Purpus 7091* (type in Univ. Calif. Herb.); Mt. Ovando, altitude 1500 m., Nov. 14 to 18, 1939, *Eizi Matuda 3933*, a small tree, 5 m. high.

Although the species was reduced to synonymy under *T. mexicana* (Liebm.) Bureau by Standley (*Contrib. U. S. Nat. Herb.*, 23: 205. 1922), it is one of the most distinct in the genus, and certainly not to be confused with that tree. It strikingly resembles the recently proposed *T. nubium* Standl.

Trophis nubium Standl., *Field Mus. Bot.*, 22: 17. 1940.

Guatemala: Department of Quezaltenango, Volcán de Zunil, in second growth thicket, altitude 1650 m., Aug. 3, 1934, *A. F. Skutch 925* (type in Herb. Field Mus.), a shrub, 3 m. high; Volcán de Santa María, between Santa María de Jesús and Colahuaché, along great barranco between Finca Pirineos and San Juan Patzulín, on top of ridge, altitude 1300 to 1500 m., Jan. 6, 1940, *J. A. Steyermark 33636* (in Herb. Field Mus.), a shrub, about 5 m. high. Department of Suchitepéquez, Volcán de Atitlán, in forest, altitude 2190 m., Oct., 1934, *Skutch 1511* (in Herb. Field Mus.), a tree, 20 m. high.

The species approaches *T. chiapensis* Brandeg., and additional collections, particularly of mature fruits, are necessary to determine whether or not it is distinct. The somewhat narrower leaves and essentially smooth young fruits apparently distinguish *T. nubium.* The fruits of *T. chiapensis,* even the youngest, are conspicuously tuberculate. Flowers of *T. chiapensis* are not known.

Struthanthus Gentlei Lundell, sp. nov.—Frutex epiphyticus. Folia petiolata, cinerea, obovata, oblanceolata vel oblongo-elliptica, apice rotundata, late obtusa vel raro emarginata, basi cuneata. Infructescentiae axillares, solitariae, sessiles vel subsessiles, subpaniculatae, usque ad 5.5 cm. longae. Fructus 8 mm. longus.

A woody epiphytic vine, branchlets striate, rather stout. Petioles stout, canaliculate, up to 6 mm. long. Leaf blades coriaceous, ashy gray, obovate, oblanceolate or oblong-elliptic, 4.5 to 8 cm. long, 3 to 4 cm. wide, apex rounded, bluntly obtuse or emarginate, base cuneate, decurrent, costa prominent on both surfaces, primary veins 5 to 8 on each side, evident on both surfaces. Infructescences axillary, solitary, usually sessile, subpaniculate, up to 5.5 cm. long, interrupted. Fruits in clusters of 3, sessile or with short pedicels not over 2 mm. long; the clusters on stalks up to 5 mm. long. Berries ovoid-oblong, 8 mm. long at maturity, with a constriction above middle.

British Honduras: Stann Creek District, Stann Creek, on tree near beach at railway pier, Oct. 13, 1938, *Percy H. Gentle 2660* (type in the University of Michigan Herbarium). Belize District: Northern River, Nov., 1933, *Gentle 921,* on tree at river edge; Hector Creek, Sibun River, Dec. 10, 1934, *Gentle 1464,* a woody vine on tree overhanging river.

The ashy gray oblanceolate or obovate leaves and the few-flowered interrupted inflorescences well mark the species.

Heisteria media Blake, *Contrib. U. S. Nat. Herb.,* 24: 3. 1922. *H. Chippiana* Standl., *Field Mus. Bot.,* 11: 130. 1932.

Honduras: Department of Copán, near Los Ranchos, May 6 and 7, 1919, *H. Pittier 8448* (type in the U. S. Nat. Herb. No.

989,624). BRITISH HONDURAS: Stann Creek District, Stann Creek Valley, along mountain stream in shade, altitude 40 m., July 9, 1932, *W. A. Schipp 970* (type collection of *H. Chippiana*), a tree, about 12 m. high, 30 cm. diameter; Middlesex, in high ridge, July 12, 1939, *Percy H. Gentle 2897*, a tree, 32.5 cm. diameter, flowers white, vernacular names, *copalché macho*, *wild cinnamon*. Toledo District, Camp 34, British Honduran–Guatemalan boundary survey, altitude about 850 m., June 10, 1934, *Schipp 1286*, a tree, about 15 m. high, 45 cm. diameter; Temash River, in primary forest, altitude about 45 m., Feb. 26, 1935, *Schipp 1327*, a tree, about 12 m. high, 25 cm. diameter, flowers cream. MEXICO: Chiapas, ruins of Palenque, in advanced forest, July 10 to 12, 1939, *Eizi Matuda 3690*, a tree, 20 m. high, 40 cm. diameter.

The leaves of the type collection of *H. Chippiana* are somewhat narrower and smaller than those of the type of *H. media*, but *Gentle 2897* has leaves matching those of both types.

Coccoloba Alleni Lundell, sp. nov.—Arbor, ramulis lepidotis. Folia petiolata, chartacea, utrinque parce lepidota, oblongo-elliptica, apice subabrupte acuminata vel obtusa, basi rotundata vel raro emarginata. Inflorescentiae racemosae, 7–8 cm. longae, rachidibus puberulis et lepidotis, angulatis, nodulis 1-floris; bracteae triangulares, obtusae, puberulae, 1.5–1.8 mm. longae; ochreolae spathaceae, apiculatae, puberulae, 3.5–4 mm. longae. Pedicelli fructiferi ad 4.2 mm. longi.

A tree, 20 m. high, branchlets striate, reddish lepidote, the scales large. Stipules up to 2 cm. long, red furfuraceous-lepidote. Petioles up to 1.6 cm. long, lepidote, shallowly sulcate above. Leaf blades thinly chartaceous, red lepidote on both surfaces, glabrous otherwise, oblong-elliptic, widest at or slightly above middle, 9 to 14.5 cm. long, 5 to 7.3 cm. wide, apex subabruptly short acuminate or obtuse, base at first acutish, at length rounded or emarginate, slightly unequal, reticulate veined, costa and primary veins nearly plane above, prominent beneath, primary veins 6 to 8 on each side. Racemes terminal, 7 to 8 cm. long, peduncle and rachis angled, striate, puberulent and lepidote; nodules 1-flowered; bracts triangular, obtuse, 1.5 to 1.8 mm. long, puberu-

lent and lepidote; ochreolae membranous, spathaceous, splitting only on 1 side, 3.5 to 4 mm. long, apiculate, puberulent and lepidote. Pedicels of fruits up to 4.2 mm. long, densely puberulent. Fruits ovoid, rounded at base, abruptly constricted into a short stipe, acutish at apex; the perianth lobes accrescent, chartaceous.

PANAMA: Province of Coclé, hills north of El Valle, altitude 1000 m., July 14, 1940, *Paul H. Allen 2181* (type in the University of Michigan Herbarium), a tree, 20 m. high, flowers white.

C. Alleni, referable to the section Campderia, appears to be allied to *C. Williamsii* Standl. of Peru. The furfuraceous-lepidote indument and the large apiculate spathaceous ochreolae are noteworthy.

COCCOLOBA BRACTEOLOSA Meissn., *Mart. Fl. Bras.*, 5, Pt. 1: 30. 1855.

PANAMA: Province of Panama, near Tapia River, Juan Diaz region, in dense forest, June 1 to 3, 1923, *W. R. Maxon and Alfred D. Harvey 6700* (in Herb. Field Mus.), a liana, hanging 20 m. from trees 30 to 35 m. high.

The Panama collection agrees very closely with both the type photograph and original description. Apparently, the species has not been reported previously outside of Brazil.

Coccoloba colonensis Lundell, sp. nov.—Frutex; ramulis glabris, striatis. Stipulae glabrae, ad 1.8 cm. longae. Folia petiolata, petiolo crasso ca. 3 mm. longo, subcoriacea, obovata, apice subabrupte acuminata, acumine obtuso, basi angustata, emarginata vel rotundata.

A shrub, branchlets stout, striate, glabrous. Stipules glabrous, tubular, up to 1.8 cm. long, the petiole inserted below middle. Petioles thick, very short, about 3 mm. long, puberulent above. Leaf blades subcoriaceous, inconspicuously glaucous above, the costa and primary veins white puberulent beneath, pilose along the costa and sparsely so along veins, barbate in the axils, punctate, glabrous otherwise, obovate, 12.5 to 17 cm. long, 7.6 to 10.5 cm. wide, apex subabruptly short acuminate, the acumen triangular, obtuse, base narrowed, emarginate or rounded, some-

times slightly unequal, costa and veins slightly elevated above, prominent beneath, primary veins 6 or 7 on each side, arcuately ascending, secondary veins rather obscure, very inconspicuously scrobiculate beneath.

HONDURAS: Department of Colon, Guarunta, Wispernini Camp, altitude 10 to 24 m., in pine ridge, March, 1938, *Christine von Hagen and Wolfgang von Hagen 1401* (type in Herb. Field Mus.; fragment in the University of Michigan Herbarium), a shrub.

Although the collection is sterile, the leaves are very distinctive and not to be confused with those of any of the described species of Mexico and Central America. The plant probably has affinity to *C. Lundellii* Standl.

Coccoloba Lasseri Lundell, sp. nov.—Arbor parva, ramulis crassis, striatis, puberulis. Stipulae subtruncatae, ad 1.5 cm. longae, puberulae. Folia petiolata, petiolo 3–5 mm. longo, puberulo, chartacea, obovata vel oblanceolato-obovata, apice rotundata, basi angustata, emarginata vel rotundata. Inflorescentiae terminales, paniculatae, ad 35 cm. longae, rachidibus puberulis, nodulis 3–6-floris; bracteae et ochreolae minutae. Pedicelli 1–1.3 mm. longi. Perianthii tubus ca. 1 mm. longus, lobis suborbicularibus, ca. 1.5 mm. longis. Styli 2 vel 3.

A small tree, branchlets thick, striate, densely puberulent. Stipules cylindrical, up to 1.5 cm. long, subtruncate, at first densely puberulent, the petiole inserted at or above middle. Petioles minutely puberulent, stout, striate, 3 to 5 mm. long. Leaf blades chartaceous, glabrous above, obscurely puberulent beneath along costa and primary veins, otherwise glabrous, obovate or oblanceolate-obovate, 10.5 to 19 cm. long, 4 to 10 cm. wide, apex rounded, attenuate from above middle to base, the base narrow, emarginate or rounded, primary veins impressed above, the costa and veins prominent beneath, veinlets obscure, primary veins 8 to 12 on each side. Inflorescence terminal, paniculate, the panicles sessile, composed of 3 or 4 stout racemes, the racemes up to 30 cm. long; peduncle of racemes up to 1.5 cm. long, the peduncle and rachis densely puberulent, striate, up to 3 mm. in diameter;

nodules 3- to 6-flowered; bracts and ochreolae minute, less than 0.5 mm. long, the ochreolae multiple at each node; pedicels 1 to 1.3 mm. long, puberulent. Perianth tube about 1 mm. long, contracted into a short stipe, lobes suborbicular, about 1.5 mm. long. Filaments slightly exceeding perianth lobes. Styles 2 or 3.

PANAMA: Province of Panama, Río Pacora, Sept. 3, 1940, *H. H. Bartlett and Tobias Lasser 16946* (type in the University of Michigan Herbarium).

A fruiting collection, *Bartlett and Lasser 16638*, obtained at La Lajas Bridge, Panama National Highway, appears to be referable here; it differs in having shorter racemes and nodules 1-flowered.

C. Lasseri is allied to *C. manzanillensis* Beurl. The inflorescence, stipule and leaf blade differences amply distinguish them.

Coccoloba riparia Lundell, sp. nov.—Arbor, ramulis striatis, glabris. Folia longe petiolata, chartacea, lanceolata, apice attenuata, acuminata, basi cordata, emarginata vel acutiuscula. Inflorescentiae racemosae, densiflorae, ad 16.5 cm. longae, rachidibus dense puberulis, angulatis, nodulis 2- vel 3-floris; bracteae puberulae, ca. 1.2 mm. longae; ochreolae laxae, ca. 2 mm. longae. Pedicelli ad 1 mm. longi.

A tree, 15 m. high, branchlets glabrous, striate. Stipules glabrous, up to 1.3 cm. long, the petiole inserted near apex. Petioles shallowly sulcate, sparsely puberulent above at apex, otherwise glabrous, striate, 1.5 to 2.5 cm. long. Leaf blades chartaceous, sparsely barbellate in the axils of the primary veins beneath, sparsely lepidote, glabrous otherwise, lanceolate, 7 to 18 cm. long, 2.6 to 7.2 cm. wide, apex attenuate, acuminate, base usually openly cordate or emarginate, sometimes acutish and unequal, reticulate on both surfaces, costa and primary veins nearly plane above, prominent beneath, primary veins 6 to 10 on each side. Staminate racemes up to 16.5 cm. long with peduncles up to 2 cm. long, densely flowered and crowded; rachis densely puberulent, striate; nodules 2- or 3-flowered; bracts about 1.2 mm. long, often 2-lobed through rupture at apex, surrounding ochreolae at base, puberulent; ochreolae multiple, 2 or 3, lax, membranous, about 2 mm. long, apiculate. Staminate flowers minute, white.

Pedicels up to 1 mm. long. Perianth tube about 0.5 mm. long including the short stipe; lobes oblong, up to 1.2 mm. long. Filaments equaling or slightly exceeding lobes. Ovary abortive.

PANAMA: Province of Coclé, floor of El Valle, along stream banks, altitude 600 m., Sept. 8, 1940, *Paul H. Allen 2229* (type in the University of Michigan Herbarium), a tree, 15 m. high, flowers white.

Coccoloba uviferiella Lundell, sp. nov.—Frutex (?) glaber. Folia petiolata, coriacea, elliptica vel orbicularia, apice rotundata, basi cordata. Inflorescentiae racemosae, terminales, ad 6 cm. longae, rachidibus glabris, nodulis 1- vel 2-floris. Flores pedicellati. Perianthii tubus ca. 1 mm. longus, lobis ovatis, 2 mm. longis.

Apparently a shrub, entirely glabrous. Petioles stout, shallowly grooved above, up to 8 mm. long, usually considerably shorter. Leaf blades rigidly coriaceous, elliptic or suborbicular, 2.7 to 7.5 cm. long, 2 to 6.5 cm. wide, apex rounded, base cordate or subcordate, costa slightly elevated on both surfaces, primary veins 4 or 5 on each side, inconspicuous, veinlets not evident. Inflorescences racemose, terminal, up to 6 cm. long; rachis glabrous, sharply angled; nodules 1- or 2-flowered; bracts broadly ovate-triangular, about 0.7 mm. long; ochreolae about 0.4 mm. long. Pedicels of flowers about 2.1 mm. long. Perianth glabrous, the tube about 1 mm. long; lobes ovate, 2 mm. long. Filaments equaling or subequaling perianth lobes. Ovary abortive. Fruiting pedicels up to 4 mm. long. Immature fruits ellipsoid, up to 8 mm. long.

CUBA: Oriente, Moa, summer of 1939, *Mrs. G. C. Bucher 101* (type in the Britton Herbarium of the New York Botanical Garden; fragment in the University of Michigan Herbarium); same locality, *Bucher 44, 45.*

The species suggests the common sea grape, *C. uvifera* (L.) Jacq., to which it is allied.

Nectandra chiapensis Lundell, sp. nov.—Arbor. Folia petiolata, novella utrinque brunneo-sericea, subtus costarum axillis manifeste barbellatis, chartacea vel subcoriacea, oblongo-elliptica, apice acuta, obtusiuscula vel subacuminata, basi acuta, revoluta.

Inflorescentiae usque ad 16 cm. longae. Flores ferrugineo-sericeo-tomentelli, ca. 6.5 mm. diam. Filamenta parce pilosa. Staminodia stipitiformia, pilosa. Ovarium glabrum.

Tree, branchlets stout, strongly angled, at first densely and minutely brown sericeous. Petioles narrowly winged, up to 1.8 cm. long, 4 mm. wide, brown sericeous. Leaf blades chartaceous or subcoriaceous, densely brown sericeous at first, prominently barbate in the axils of the primary veins, oblong-elliptic, 9 to 14.5 cm. long, 4 to 6 cm. wide, apex acute, obtusish or short acuminate, base acute, revolute, costa slightly impressed above, broad and prominent beneath, primary veins 9 to 12 on each side, reticulation obscure above, prominulous beneath. Panicles axillary, brown sericeous, up to 16 cm. long; pedicels 1 to 2.5 mm. long. Flowers about 6.5 mm. in diameter, densely sericeous-tomentose with ferruginous hairs; perianth tube short, lobes ovate or ovate-oblong, acutish. Filaments of series I and II a third shorter than anthers, sparsely pilose; glands of series III large, borne slightly above base, filaments equaling anthers. Anthers broadly truncate. Staminodia stipelike, pilose. Ovary glabrous, equaling style; stigma discoid.

Mexico: Chiapas, at Cerro Laguna, Mapastepec, January, 1938, *Eizi Matuda 2042* (type in the University of Michigan Herbarium).

N. chiapensis is related to *N. nitida* Mez and *N. Loesenerii* Mez. The winged petioles, reticulate venation, barbate axils of the numerous primary veins, thick costa, and the brown sericeous indument are distinguishing characteristics.

Nectandra Gentlei Lundell, sp. nov.—Arbor, ramulis brunneo-tomentellis. Folia petiolata, chartacea, anguste lanceolata, apice attenuata, caudato-acuminata, basi acuta vel acuminata, supra juventate sericea, mox glabrata, subtus cupreo-sericea. Inflorescentiae paniculatae, axillares, brunneo-tomentellae, usque ad 12 cm. longae. Flores tomentelli, 5–5.5 mm. diam. Filamenta glabra, subnulla. Antherae emarginatae vel truncatae, haud obtusae. Ovarium glabrum; stylus ovario longior.

A tree, 20 cm. in diameter, branchlets slender, at first angled,

dark brown tomentellous. Petioles brown tomentellous, 1 to 1.5 cm. long. Leaves firmly chartaceous, narrowly lanceolate, 10.5 to 20 cm. long, 2 to 4.5 cm. wide, apex attenuate, long caudate-acuminate, base acute or acuminate, at first sericeous on both surfaces, with age glabrous above except along the midvein at base, undersurface pale cupreate and persistently short sericeous, costa and veins subimpressed above, nearly plane, prominent beneath, primary veins 5 or 6 on each side, strongly ascending. Inflorescences paniculate, brown puberulent-tomentellous, the panicles strictly axillary, up to 12 cm. long, with long peduncles; pedicels tomentellous, about 2 mm. long, accrescent slightly. Flowers fragrant, tomentellous, 5 to 5.5 mm. diameter. Perianth tube small but well developed, about 1 mm. long, very slightly constricted at apex, the lobes oblong or elliptic. Filaments glabrous, very short, those of series I and II adhering to perianth lobes, the anthers essentially sessile. Stamens of series I and II spreading, those of series III erect, forming a tube around the style. Filaments of series III about one-third the length of anthers, connate at base, the glands large, borne at base of tube. Anthers subrectangular, broader than long, emarginate or truncate, never obtuse, papillate. Staminodia stipitiform, papillate and bearing a few hairs, borne between the filaments of series III above point of adnation. Ovary glabrous; included in the perianth tube; style slightly longer than ovary. Fruits subglobose, about 8 mm. in diameter; cupule very shallow, about 6 mm. in diameter, 2 mm. deep, thin, with simple margin, essentially glabrous.

British Honduras: Stann Creek District, Mullins River, in high ridge on river bank, Dec. 15, 1940, *Percy H. Gentle 3456* (type in the University of Michigan Herbarium), a tree, 20 cm. in diameter, bark dark, wood creamish, moderately hard, flowers white, sweet scented. Guatemala: Department of Petén, La Libertad, at edge of an *aguada*, April 6, 1933, *C. L. Lundell 2578*, a tree, vernacular name, *laurel*.

This tree is probably the one reported by Mez from Mexico under the name *N. Pichurim* (H.B.K.) Mez. It obviously is very close to that species, but likewise shows strong affinities to *N. globosa* (Aubl.) Mez, *N. ambigua* Meissn. and *N. urophylla* Meissn. The much smaller flowers immediately distinguish it from the last

3. From *N. Pichurim* it differs in various minor characteristics, but most noticeably in stamen peculiarities. In *N. Gentlei* the anthers are emarginate or truncate, never obtuse, those of series I and II essentially sessile through adherence of the short filaments to the perianth lobes; in series III the stamens form a column around the style and the short filaments are connate at base. The style of *N. Gentlei* slightly exceeds the ovary, not subequaling it as in *N. Pichurim.*

Ocotea effusa (Meissn.) Hemsl., *Biol. Centr. Amer. Bot.*, 3: 73. 1882. *Oreodaphne effusa* Meissn. in *DC. Prodr.*, 15, Pt. 1: 120. 1864.

British Honduras: Stann Creek District, Middlesex, in high ridge, July 20, 1939, *Percy H. Gentle 2926*, a tree, 20 cm. diameter; Stann Creek Valley, Mountain Cow Ridge, March 20, 1940, *Percy H. Gentle 3266.*

This tree apparently has not been reported previously outside of Mexico.

Ocotea escuintlensis Lundell, sp. nov.—Arbor, ramulis minute adpresse puberulis. Folia petiolata, glabra, chartacea, oblanceolato-oblonga vel obovata, apice obtusa vel rotundata, basi cuneata. Inflorescentiae usque ad 13 cm. longae, minute adpresse puberulae. Flores adpresse puberuli. Antherae papillosae. Staminodia stipitiformia, pilosa. Ovarium glabrum.

Tree, branchlets slender, angled, at first densely appressed puberulent with minute grayish hairs. Petioles slender, glabrous, canaliculate, 3.5 to 10 mm. long. Leaf blades entirely glabrous, chartaceous, oblanceolate-oblong or obovate, 7 to 11.5 cm. long, 2.3 to 4.5 cm. wide, apex obtuse or rounded, base cuneate, with age dull and smooth above, inconspicuously reticulate beneath, costa prominent, primary veins 7 to 9 on each side, inconspicuous. Panicles axillary, many-flowered, often exceeding leaves, up to 13 cm. long, densely and minutely appressed puberulent; pedicels slender, up to 6 mm. long. Flowers appressed puberulent, about 5 mm. long; perianth tube slender, well developed, the lobes oblong, obtusish. Anthers foliaceous, contracted at base, densely papillose; series I and II with very short stout filaments; series III

with well-developed filaments somewhat shorter than anthers, the two glands sessile, borne above base. Staminodia stipelike, conspicuous, densely pilose. Ovary glabrous; the style slightly shorter than ovary.

MEXICO: Chiapas, Escuintla, May 3, 1936, *Eizi Matuda 654* (type in the University of Michigan Herbarium).

O. escuintlensis is related to *O. rubra* Mez of northern South America.

Ocotea eucuneata Lundell, sp. nov.—Arbor, ramulis puberulis. Folia petiolata, subchartacea, puberula, oblanceolata, apice acuminata, acumine obtusiusculo, basi cuneata. Inflorescentiae usque ad 8.5 cm. longae, puberulae. Flores hermaphroditi, minute substrigosi. Filamenta puberula. Antherae minute emarginatae vel truncatae. Staminodia 0. Ovarium glabrum.

A large tree, about 1 m. in diameter. Branchlets appressed puberulent, rather slender, angled, often drying blackish. Petioles puberulent, canaliculate, 5 to 12 mm. long. Leaf blades thin, subchartaceous, oblanceolate, 7.5 to 16 cm. long, 2.8 to 4.7 cm. wide, apex abruptly acuminate, the acumen obtusish, base cuneate, puberulent on both surfaces, at length subglabrescent, minutely barbate beneath in axils of primary veins, finely reticulate-veined beneath, costa plane above, the primary veins 5 to 8 on each side. Inflorescence up to 8.5 cm. long, grayish-puberulent. Flowers perfect, with short pedicels, densely grayish-puberulent, the hairs subappressed. Perianth tube conspicuous; lobes ovate, up to 1.8 mm. long, acutish. Stamens 9; filaments puberulent, equaling or subequaling anthers; glands of series III sessile; anthers truncate or slightly emarginate. Ovary glabrous, half as long as style.

BRITISH HONDURAS: Stann Creek District, in high ridge at Middlesex, Oct. 27, 1939, *Percy H. Gentle 3068* (type in the University of Michigan Herbarium), vernacular name, *timber sweet.*

This well-marked species apparently has closest affinity to *O. insularis* (Meissn.) Mez of Cocos Island.

Ocotea ovandensis Lundell, sp. nov.—Arbor, ramulis crassis, minute adpresse puberulis. Folia petiolata, glabra, chartacea, ob-

longa vel oblanceolato-oblonga, apice obtusa vel acuminata, acumine obtuso, basi cuneata. Inflorescentiae glabrae vel subglabrae, usque ad 11 cm. longae. Flores glabri. Filamenta subnulla, pilosa. Staminodia parva. Ovarium glabrum. Bacca ellipsoidea, 1.8 cm. longa, 1.1 cm. diam.

Tree, branchlets stout, at first very minutely and densely appressed-puberulent, striate. Petioles up to 2 cm. long, very narrowly winged, glabrous. Leaf blades glabrous, chartaceous, oblong or oblanceolate-oblong, 16 to 27 cm. long, 5.5 to 10.5 cm. wide, apex obtuse or obtusely acuminate, base cuneate, costa plane above, prominent beneath, finely areolate, primary veins 9 to 11 on each side, conspicuous beneath. Inflorescence paniculate, glabrous or very obscurely and minutely appressed puberulent, up to 11 cm. long. Flowers apparently perfect, with slender pedicels up to 5 mm. long, essentially glabrous. Perianth tube small, but well developed; lobes oblong or elliptic-oblong, up to 4 mm. long, obtuse, short hairy within at base. Stamens 9, with very short pilose filaments; anthers 4-celled, oblong, slightly constricted at base, obtusish; glands of series III sessile. Staminodia minute, pilose. Ovary glabrous; style subequaling or shorter than ovary. Fruits ellipsoid, 1.8 cm. long, 1.1 cm. diameter, cupule 4 to 5 mm. long, about 7 mm. diameter, with double margin.

Mexico: Chiapas, Mt. Ovando, Dec. 17, 1936, *Eizi Matuda 444* (type in the University of Michigan Herbarium); Mt. Ovando, April 5, 1936, *Matuda S-167*, April 9 to 12, 1937, *Matuda 1839;* Mt. Paxtal ("Pasitar"), Dec., 1936, *Matuda 1012.*

Persea flavifolia Lundell, sp. nov.—Arbor, ramulis dense flavido-sericeis vel tomentosis. Folia petiolata, coriacea, lanceolato-oblonga vel elliptico-oblonga, apice obtuse acuminata, basi rotundata et acutiuscula, supra glabra, subtus dense flavido-sericea. Inflorescentiae flavido-sericeae, foliis multo brevior. Limbi segmenta exteriora interioribus subduplo breviora. Androecium seriebus 3 fertilibus. Filamenta subsericea. Glandulae stipitatae, cordatae. Antherae 4-locellatae. Ovarium glabrum. Bacca globosa, 1 cm. diam.

Tree, 7 m. high, 35 cm. diameter; branchlets stout, conspicu-

ously angled and striate, at first tomentose with straight appressed golden-brown hairs. Petioles sericeous-tomentose, golden-brown, up to 4.5 cm. long. Leaf blades coriaceous, yellow-green above, with a golden-brown sheen beneath, lanceolate-oblong or elliptic-oblong, 10 to 21 cm. long, 2.2 to 8.7 cm. wide, apex obtusely acuminate, base rounded and acutish, smooth and at first sparsely sericeous above but glabrous early, persistently and densely sericeous beneath with golden-brown hairs, costa plane above, elevated beneath, primary veins 7 to 11 on each side, conspicuous beneath. Inflorescence axillary, the panicles short, compact, long-stalked, densely sericeous with golden-brown hairs. Flowers subsessile, densely sericeous, 5 to 6 mm. long including the short thick pedicel. Perianth lobes strongly unequal, the outer about half as long as the inner, ovate or oblong, acutish or obtusish. Fertile stamens 9. Filaments slender, equaling to one and a half times as as long as anthers, subsericeous; glands of series III basal, cordate-oblong, borne on short stipes. Anthers oblong, small, subtruncate, 4-celled. Staminodia ovate, subsericeous, with long filaments. Ovary glabrous, or with few appressed hairs, the style about one-half longer; stigma large, capitate. Fruits globose, black, 1 cm. diameter, the perianth lobes persistent.

Mexico: Chiapas, Mt. Ovando, April 9 to 12, 1937, *Eizi Matuda 1821* (type in the University of Michigan Herbarium); Mt. Ovando, February, 1939, *Matuda 2651*.

P. flavifolia resembles *P. Benthamiana* Meissn. of Brazil.

Persea Gentlei Lundell, sp. nov.—Arbor, ramulis novellis sericeo-tomentosis. Folia petiolata, chartacea vel subcoriacea, elliptico-oblonga, apice abrupte acuminata, basi acuta. Inflorescentiae sericeo-tomentellae, usque ad 18 cm. longae. Flores sericei, ca. 4 mm. longi. Androecium seriebus 3 fertilibus. Filamenta antheras duplo breviora. Antherae 4-locellatae, apice truncatae. Ovarium glabrum. Bacca ellipsoidea, 1.8 cm. longa, 1.1 cm. diam.

Tree, 30 cm. in diameter. Branchlets stout, angled, at first gray sericeous-tomentose. Petioles stout, up to 2.5 cm. long, glabrescent. Leaf blades chartaceous or subcoriaceous, elliptic-oblong, 12 to 32 cm. long, 6 to 14.5 cm. wide, apex abruptly short acuminate,

base acute, costa impressed above, prominent beneath, finely reticulate-veined, primary veins 8 to 11 on each side, at first sericeous above along midrib and veins, densely gray sericeous-tomentose beneath, glabrescent with age. Inflorescence up to 18 cm. long, axillary, with long peduncles, gray sericeous-tomentose. Flowers white, fragrant, short sericeous, about 4 mm. long, borne on pedicels up to 4 mm. long. Perianth segments subequal, obovate-orbicular, rounded at apex. Fertile stamens 9; filaments short, about half the length of anthers; glands of series III basal, subsessile; anthers 4-celled, shallowly emarginate or truncate, papillate. Staminodia conspicuous, the filaments sparsely short pilose. Ovary glabrous; stigma subsessile. Fruits ellipsoid, 1.8 cm. long, 1.1 cm. diameter, with conspicuous cupule up to 1 cm. long.

British Honduras: Stann Creek District, Stann Creek Valley, Mountain Cow Ridge, in high ridge on hillside, March 30, 1940, *Percy H. Gentle 3288* (type in the University of Michigan Herbarium), vernacular name, *ca' ca' woung;* Stann Creek Valley, Big Eddy Ridge, April 26, 1940, *Gentle 3308;* May 20, 1940, *Gentle 3343,* vernacular names, *wild pear, timber sweet.*

Phoebe acuminatissima Lundell, sp. nov.—Arbor parva, sericea. Folia petiolata, subchartacea, utrinque sericea, subtus costarum axillis barbellatis, lanceolata, apice caudato-acuminata, basi acuta. Inflorescentiae racemosae, foliis brevior. Pedicelli usque ad 4.5 mm. longi. Flores adpresse pilosi. Filamenta subnulla, parce pilosa. Antherae 4-locellatae. Ovarium glabrum. Bacca ellipsoidea, ca. 1.7 cm. longa, 0.8 cm. diam.

A small tree 5 m. high, 15 cm. in diameter, branchlets very slender, at first densely gray sericeous, angled. Petioles slender, sericeous, 0.8 to 1.7 cm. long. Leaf blades subchartaceous, densely gray sericeous at first on both surfaces, at length sparsely sericeous, barbate in the axils beneath, lanceolate, 4.5 to 12.5 cm. long, 1.1 to 2.8 cm. wide, apex caudate-acuminate, base acute, costa slightly impressed above, elevated beneath, pinnately veined, primary veins 7 to 11 on each side, prominulous beneath, reticulation fine. Inflorescence racemose, axillary, gray sericeous; pedicels slender, up to 4.5 mm. long. Flowers gray sericeous, pel-

lucid-punctate, up to 7 mm. in diameter; perianth tube short, lobes linear-oblong, 3 mm. long, bluntly obtuse. Filaments very short, about one-fourth the length of anthers, sparsely pilose; glands at base of series III large, subsessile. Anthers 4-celled, truncate or obtuse. Staminodia of series IV conspicuous with pilose filaments. Ovary glabrous, slightly longer than style. Fruits (immature) ellipsoid, 1.7 cm. long, 0.8 cm. diameter; fruiting pedicels thickened, cupule shallow, about 2 mm. deep.

Mexico: Chiapas, Mt. Ovando, December, 1937, *Eizi Matuda 2107* (type in the University of Michigan Herbarium); Mt. Ovando,Dec. 16, 1936, *Matuda 569*, April 5, 1936, *Matuda S-49*.

P. acuminatissima is allied to *P. psychotrioides* (H.B.K.) Mez.

Phoebe belizensis Lundell, sp. nov.—Arbor, ramulis et petiolis rufo-piloso-tomentosis. Folia petiolata, chartacea, pilosa, oblonga, apice acuta vel acuminata, basi rotundata. Inflorescentiae pilosae, usque ad 10 cm. longae. Flores pilosi, pedicellis usque ad 6.5 mm. longis. Filamenta glabra, subnulla. Ovarium glabrum. Bacca ellipsoidea, usque ad 1.3 cm. longa.

Tree, 25 cm. in diameter, branchlets and petioles densely pilose-tomentose with rufous hairs. Petioles 5 to 10 mm. long, rather stout. Leaf blades chartaceous, pallid, oblong, 11 to 22 cm. long, 3.7 to 8.5 cm. wide, apex rather abruptly acute or acuminate, base rounded, softly pilose on both surfaces, glabrescent above except along the midrib, costa and veins impressed above, primary veins 6 to 8 on each side. Inflorescence axillary, up to 10 cm. long, densely pilose. Flowers white, rather sparsely pilose, the hairs subappressed; pedicels densely pilose, up to 6.5 mm. long, sharply accrescent. Perianth tube small, the lobes oblong or obovate-elliptic, obtuse or rounded at apex, 3.6 to 4.3 mm. long. Stamens 9, those of series III with 2- or 4-celled anthers; filaments glabrous, very short, the anthers subsessile; glands of series III large, sessile. Staminodia small. Ovary glabrous; style shorter than ovary. Fruits ellipsoid, up to 1.3 cm. long, shiny, borne on slender pedicels up to 1.7 cm. long; cupule small, less than 4 mm. long.

British Honduras: Stann Creek District, Stann Creek Valley, Mountain Cow Ridge, in high ridge, March 31, 1940, *Percy H. Gentle 3304* (type in the University of Michigan Herbarium), ver-

nacular name, *white laurel;* Stann Creek Valley, Big Eddy Ridge, May 21, 1940, *Gentle 3346.*

P. belizensis is very closely allied to *P. helicterifolia* (Meissn.) Mez and *P. nectandroides* Mez, both of which have glabrous flowers. Anthers of series III of *P. belizensis* are often 2-celled; hence the species represents an intermediate form between the subgenera Heteranthera and Euphoebe.

Phoebe chiapensis Lundell, sp. nov.—Arbor, ramulis novellis parce strigosis. Folia petiolata, subcoriacea, glabra, lanceolata, utrinque acuminata, areolata. Inflorescentiae cymosae, glabrae, usque ad 5 cm. longae. Flores glabri. Filamenta adpresse pilosa, antheris breviora. Antherae 4-locellatae. Ovarium glabrum.

Tree, 7 to 8 m. high, 20 cm. diameter, branchlets slender, at first sparsely white strigose, reddish, angled. Petioles slender, canaliculate, 5 to 11 mm. long. Leaf blades subcoriaceous, glabrous, rarely with a few appressed hairs on costa beneath, lanceolate or linear-lanceolate, 5.5 to 10 cm. long, apex attenuate, acuminate, base acute or acuminate, areolate, conspicuously so on undersurface, costa prominent beneath, nearly plane above, primary veins 5 to 7 on each side. Inflorescence axillary, cymose, few-flowered, glabrous, up to 5 cm. long, long stalked. Pedicels slender, glabrous, up to 8 mm. long. Flowers glabrous outside, up to 2.6 mm. long; perianth tube very short, lobes ovate, acutish, finely sericeous within. Filaments appressed pilose, slightly shorter than anthers; glands of series III short stalked or subsessile, rather small, borne slightly above base of filament. Anthers 4-celled, truncate or rounded. Staminodia large, acute, with thick appressed pilose filaments. Ovary glabrous, equaling style; stigma large, discoid.

Mexico: Chiapas, Mt. Ovando, December, 1937, *Eizi Matuda 2064* (type in the University of Michigan Herbarium); Mt. Ovando, December 17, 1936, *Matuda 429.*

P. chiapensis has affinities to *P. pallescens* Mez and *P. salicifolia* Nees.

Phoebe obtusata Lundell, sp. nov.—Arbor, ramulis crassis, fulvo-tomentosis. Folia petiolata, chartacea, oblonga, oblanceolato-oblonga vel obovato-elliptica, apice obtusa vel rotundata, basi rotundata vel emarginata, supra subglabra, subtus fulvo-

pilosa. Inflorescentiae subglabrae, axillares vel terminales, usque ad 22 cm. longae. Pedicelli glabri. Flores 7–9 mm. diam., extus glabri. Filamenta subnulla. Ovarium glabrum.

A tree, branchlets stout, fulvous tomentose. Petioles stout, fulvous tomentose, 1 to 1.5 cm. long. Leaf blades chartaceous, oblong, oblanceolate-oblong or obovate-elliptic, 10 to 16 cm. long, 4 to 6.3 cm. wide, apex obtuse or rounded, often narrowed, base rounded or shallowly emarginate, persistently fulvous pilose beneath, at first pilose above, but glabrous with age except along the veins and midrib, costa and veins impressed above, prominent beneath, primary lateral veins 6 to 9 on each side. Inflorescences many-flowered, sparsely fulvous pilose below, glabrous above, the panicles axillary or terminal, 8 to 22 cm. long, usually exceeding leaves. Pedicels glabrous, 3.5 to 6 mm. long. Flowers, excepting tips of perianth lobes and receptacle, glabrous, 7 to 9 mm. diameter. Perianth tube very short, the lobes oblong, glabrous outside, tomentellous within at apex and bearing a few long hairs at base. Filaments very short, glabrous or bearing few hairs. Anthers foliaceous, elliptic or suborbicular, up to 2 mm. long, usually 4-celled, rarely 6-celled, apex rounded or emarginate. Staminodia comparatively small, with a few long hairs on filaments. Receptacle sparsely hirsute. Ovary glabrous, subequaling the stout style; stigma capitate.

Mexico: Chiapas, Buena Vista near Escuintla, Jan., 1938, *Eizi Matuda 1887* (type in the University of Michigan Herbarium).

P. obtusata approaches *P. nectandroides* Mez, but evidently differs from that species, according to description, in its bluntly obtuse much smaller oblong or oblanceolate-oblong leaves and sordid fulvous pubescence.

Phoebe Pittieri Mez, *Bot. Jahrb.*, 30, Beibl. 67: 16. 1901.

Mexico: Chiapas, Escuintla, November, 1936, *Eizi Matuda 2252.*

Although the Chiapas material is in bud only, the specimen agrees closely with the type photograph and description of *P. Pittieri.* The species has been reported previously from Costa Rica only.

Phoebe platyphylla Lundell, sp. nov.—Arbor, ramulis et petiolis minute adpresse puberulis. Folia petiolata, membranacea, minute sericea, oblonga, elliptica vel obovato-elliptica, apice obtusa, basi acuta. Inflorescentiae glabrae vel parce puberulae, usque ad 15 cm. longae. Flores glabri, ca. 6 mm. longi, pedicellis usque ad 1 cm. longis. Filamenta crassa, subnulla. Ovarium glabrum.

Tree, 10 to 12 m. high, 50 to 60 cm. in diameter, branchlets stout, angled, minutely gray puberulent with appressed hairs, at length nearly glabrous. Petioles minutely appressed-puberulent, 1 to 2 cm. long. Leaf blades membranaceous, yellow-green, often barbate in the axils of the nerves beneath, at first minutely sericeous on both surfaces, glabrescent, oblong, elliptic or obovate-elliptic, 9 to 25 cm. long, 4.5 to 11.5 cm. wide, apex obtuse or obtusely acuminate, base acute, costa slightly impressed above, prominent beneath, reticulate-veined on both surfaces, primary veins 6 to 11 on each side, conspicuous. Inflorescences axillary, glabrous or very sparingly puberulent, up to 15 cm. long, the rachis and branches flattened, enlarged at the nodes, striate. Flowers white, glabrous, about 6 mm. long, 1 cm. in diameter, with pedicels up to 1 cm. long. Perianth tube short, the lobes broadly elliptic, 5 mm. long, minutely erose, rounded. Stamens 9, up to 3 mm. long, foliaceous, with very short filaments; anthers 4-celled, elliptic or ovate-elliptic; series III with thick filaments less than one-third the length of anthers, with two large sessile glands at base of each filament. Staminodia large. Ovary glabrous, twice the length of style.

Mexico: Chiapas, Finca Suiza near Montecristo, January, 1938, *Eizi Matuda 1930* (type in the University of Michigan Herbarium).

P. platyphylla is near *P. ambigens* Blake of eastern Guatemala and Honduras.

Phoebe Salvini (Mez) Lundell, comb. nov.—*Ocotea Salvini* Mez, *Jahrb. Bot. Gard. Mus. Berlin*, 5: 264. 1889.

Mexico: Chiapas, Mt. Paxtal ("Pasitar"), December, 1936, *Eizi Matuda 2209.*

The staminodia are cordate-sagittate, as described by Mez, and

there is no logical reason for reference of the species to *Ocotea*. In fact, Mez keys it out under *Phoebe*.

CONNARUS LENTIGINOSUS Brandeg., *Univ. Calif. Publ. Bot.*, 6: 186. 1915.

MEXICO: Chiapas, Finca Esperanza near Escuintla, Feb., 1936, *Eizi Matuda 2295*.

The Matuda collection, which has been compared with the type, represents the second record for the species. A third collection, extending the range of the plant into Guatemala, has been reported recently (*Field Mus. Bot.*, 22: 234. 1940).

BAUHINIA JENNINGSII P. Wilson, *Bull. Torrey Bot. Club*, 43: 463. 1916. *Casparea Jenningsii* (P. Wilson) B. & R., *N. Amer. Fl.*, 23: 216. 1930. *Bauhinia Castilloi* Standl., *Field Mus. Bot.*, 22: 78. 1940.

BRITISH HONDURAS: Corozal District, Freshwater Creek Reserve, Feb. 17, 1939, *A. Castillo 48* (type of *B. Castilloi* in Herb. Field Mus.), vernacular name, *cow tongue*. El Cayo District: Vaca, on hillside, *Percy H. Gentle 2271*, a tree, 5 cm. diameter, flowers yellow. GUATEMALA: Department of Petén, Uaxactun, Mar. 20, 1931, *H. H. Bartlett 12145*, a tree, 2.5 to 5 cm. diameter, flowers red; Santa Cruz, March 27 and 28, 1931, *Bartlett 12387*, a slender shrub, about 4 m. high, flowers red. MEXICO: Yucatán, Puerto Morelos, *Goldman 624* (ex Standl., *Field Mus. Bot.*, 3: 283. 1930).

Although I have not seen type material of the plant, described originally from the Isle of Pines, Cuba, all the Yucatán Peninsula collections certainly appear to be referable to the species. The type of *B. Castilloi* differs in no particular from the very ample material of the species in the University of Michigan Herbarium.

Bauhinia (*Casparea*) **palenquensis** Lundell, sp. nov.—Arbor parva, ramulis brunneo-tomentosis. Folia petiolata, integra vel raro emarginata, membranacea, subtus dense pilosa, ovata vel ovato-oblonga, apice acute apiculata, basi rotundata vel subtruncata, 7-nervia. Pedicelli ad 2.2 cm. longi. Calyx ca. 2 cm. longus. Petala 5, anguste lanceolata, ad 2.5 cm. longa. Legumen (immaturo) ad 18 cm. longum, 1.6 cm. diam.

A small tree, 3 m. high, branchlets finely brownish tomentose. Petioles 1.7 to 2.7 cm. long, tomentose. Leaf blades usually entire, membranaceous, densely pilose beneath, glabrous above except along the midvein, ovate or ovate-oblong, 8.5 to 12 cm. long, 5 to 6.8 cm. wide, apex abruptly and acutely apiculate, rarely emarginate, base rounded or subtruncate, 7-nerved. Racemes rather sparsely tomentose, with peduncles about 1 cm. long. Pedicels very slender, thinly pilose-tomentose, up to 2.2 cm. long. Flower buds reflexed, short tomentose. Calyx about 2 cm. long. Petals 5, reddish, narrowly lanceolate, long clawed, up to 2.5 cm. long, bearing a few long hairs at apex. Perfect stamen subequaling longest petals. Filaments of abortive stamens glabrous. Ovary densely hairy. Legume (immature) up to 18 cm. long (including stipe), 1.6 cm. wide, puberulent, apex cuspidate.

Mexico: Chiapas, ruins of Palenque, in advanced forest, July 10 to 12, 1939, *Eizi Matuda 3666* (type in the University of Michigan Herbarium), a small tree, 3 m. high, flowers *encendido.*

The closest relationship of *B. palenquensis* is with *B. rubeleruziana* Donn. Sm. The finer tomentum, leaves usually entire and rounded at base, and the glabrous filaments of the abortive stamens amply distinguish it. In *B. rubeleruziana,* the type of which has been examined, the tomentum is denser and dark brown, the leaves are broader, cordate at base and lobed at apex, and the filaments of the abortive stamens are pilose. *B. emarginella* Standl. is allied also, but it differs in pubescence and leaf characteristics.

Calopogonium lanceolatum Brandeg., *Univ. Calif. Publ. Bot.,* 6: 182. 1915. *Galactia acuminata* Steyermark, *Field Mus. Bot.,* 22: 144, 238. 1940.

The plant recently described by Steyermark as *Galactia acuminata* agrees in all details with the isotype of *Calopogonium lanceolatum* Brandeg. (*Purpus 7436*) in the U. S. National Herbarium. The specimen of *G. acuminata* (*Matuda 1741*), originally designated as the type, is in the University of Michigan Herbarium.

The calyx characteristics preclude reference of *C. lanceolatum* to the genus *Galactia.* Donnell Smith 6134 (*Heyde & Lux*) from

Guatemala, determined by Micheli as *Calopogonium galactioides* (H.B.K.) Benth., appears to be closely related.

Chaetocalyx Matudai Lundell, sp. nov.—Herba setosa, volubilis. Folia pinnata, petiolata. Foliola 5 vel 7, membranacea, subglabra, late elliptica vel obovato-elliptica, apice rotundata, mucronata, basi rotundata. Flores ad axillas fasciculati, pedicellis 4–6 mm. longis. Calyx tubuloso-campanulatus, setosus, ciliolatus. Petala glabra. Legumen setosum.

A slender vine, stems sparsely short setose with hairs slightly inflated at base. Stipules lanceolate, about 5 mm. long, caudate-acuminate, margin setose. Leaves pinnate, the rachis up to 10 cm. long, sparsely setose; petioles up to 5 cm. long, sparsely setose and usually bearing a few short incurved hairs. Leaflets 5 or 7, short petiolulate, thinly membranaceous, broadly elliptic or obovate-elliptic, 1.5 to 2.8 cm. long, 1.4 to 2.4 cm. wide, apex rounded and mucronate, base rounded, at first sparsely subappressed ciliate and bearing a few scattered hairs on lower surface, otherwise glabrous, primary veins 5 or 6 on each side, inconspicuous. Flowers geminate at the leafy nodes. Pedicels 4 to 6 mm. long, accrescent. Calyx tube tubular-campanulate, 5 to 6 mm. long, setose, ciliolate, the lobes linear, 2 to 2.5 mm. long, ciliolate, setose. Petals glabrous, the standard up to 2 cm. long, ovate-orbicular, long-clawed, emarginate at apex. Ovary setose. Legume setose.

Mexico: Chiapas, Escuintla, November 23, 1936, *Eizi Matuda 834* (type in the University of Michigan Herbarium).

The thinly membranaceous essentially glabrous leaflets, glabrous corolla, setose ovary, and setose legume distinguish this well-marked species from the others of Mexico and Central America. It appears to be nearest *C. brasiliensis* (Vogel) Benth., a plant with glabrous legumes.

Galactia anomala Lundell, sp. nov.—Herba, caulibus filiformibus volubilibus, strigosus. Folia trifoliolata, petiolata. Foliola linearia, strigosa. Flores 1, pedicellati. Calyx strigosus, usque ad 9 mm. longus. Corolla glabra, usque ad 1.2 cm. longa. Legumina strigosa, 4–5 mm. lata, 2.8–3.5 cm. longa.

A perennial herbaceous vine, filiform, twining on grasses in pine

land, strigose. Leaves digitately trifoliolate, strigose. Stipules subulate, about 2.5 mm. long. Petioles filiform, up to 4 cm. long. Leaflets linear, equal or nearly so, subsessile, 2 to 5 cm. long, 1.8 to 3 mm. wide, apex obtusish and apiculate, base acuminate, strigose on both surfaces, costa subimpressed above, prominent beneath, veins conspicuous beneath. Flowers solitary in the leaf axils, with strigose pedicels about 2 mm. long. Calyx strigose, up to 9 mm. long, 4-lobed, the lobes up to 5.5 mm. long, acute or acuminate. Corolla purplish, glabrous, standard about 1.2 cm. long, shallowly emarginate. Stamens 10, the one uppermost free. Ovary strigose; style glabrous. Pod linear, strigose, 4 to 5 mm. wide, 2.8 to 3.5 cm. long.

British Honduras: El Cayo District, Mountain Pine Ridge, in sandy pine uplands at San Agustin, Aug. 12, 1936, *C. L. Lundell 6901* (type in the University of Michigan Herbarium).

The digitately trifoliolate leaf is an anomalous condition in the genus. Mr. E. P. Killip has compared the material with specimens in the U. S. National Herbarium, and he suggests that the relationship of *G. anomala* is with *G. stenophylla* Urban.

Phaseolus chiapasanus Piper, *Proc. Biol. Soc. Wash.*, 34: 41. 1921.

Mexico: Chiapas, Cascada near Siltepec, Aug. 3, 1937, *Matuda S-219;* Toquillan near Siltepec, Aug. 8, 1937, *Matuda 1668* (determined by C. V. Morton).

According to Mr. Morton, the species has been known previously only from the type (*Purpus 6881* from Mexiquito, Chiapas). *Matuda S-219* has been designated as a new species of *Mucuna* by Paul C. Standley, and both of the recent collections were distributed under the name he assigned to the plant.

Pithecolobium (*Zygia*) **disciferum** Lundell, sp. nov.—Arbor. Stipulae minutae. Folia petiolata. Pinnae 1-jugae. Foliola 5, membranacea, elliptico-oblonga vel lanceolato-oblonga, apice obtusa. Inflorescentiae capitatae; bracteae minutae. Calyx 3–4 mm. longus. Corolla 6–8 mm. longa.

A tree 10 to 15 m. high, 30 to 40 cm. in diameter, branchlets at

first brownish, hirtellous with short incurved hairs, glabrescent early. Stipules minute, less than 1.5 mm. long. Petioles short, up to 5 mm. long, bearing at apex a conspicuous disciform gland. Pinnae 1 pair. Leaflets usually 5, the upper two pair opposite or nearly so, the rachis short hirtellous with incurved hairs, canaliculate; the blades obliquely elliptic-oblong or lanceolate-oblong, up to 10 cm. long, 4.4 cm. wide, apex usually obtuse, base obliquely obtuse, glabrous except for a few scattered short hairs at base, finely reticulate-veined on both surfaces. Flowers in small heads, on puberulent peduncles up to 7 mm. long. Calyx 3 to 4 mm. long, the teeth ciliolate, glabrous otherwise. Corolla 6 to 8 mm. long, the teeth sparsely puberulent, glabrous otherwise. Stamen tube 8 to 10 mm. long. Ovary glabrous.

Mexico: Campeche, at Vapor east of Palizada, July 25 to 28, 1939, *Eizi Matuda 3908* (type in the University of Michigan Herbarium).

P. disciferum has affinity to *P. latifolium* (L.) Benth., a species separable immediately by its much smaller calyx. The tree usually grows on river banks, and it is rather common in the southern half of the Yucatán Peninsula. All of the following collections are referable here: *Gentle 920, 1310; Lundell 1497, 4374;* and, *Matuda 3211.*

Pithecolobium (*Cojoba*) **Gentlei** Lundell, sp. nov.—Frutex; ramulis ferrugineo-pilosis. Folia bipinnata, petiolata, petiolo rufo-piloso; pinnis 1–4-jugis; foliolis 5–18-jugis, lanceolato-oblongis vel oblongis, sessilibus, apice obtusiusculis, basi rotundatis, parce rufo-pilosis. Inflorescentiae axillares, capitatae; pedunculis 2–5.5 cm. longis, rufo-pilosis. Bracteae lineari-setaceae. Calyx ca. 4 mm. longus. Corolla ca. 10 mm. longa. Legumen usque ad 18 cm. longum.

A shrub, up to 4 m. high, 5 cm. in diameter, branchlets, petioles, leaf-rachis and peduncles at first densely pilose with ferruginous hairs. Petioles up to 2.4 cm. long. Pinnae 1 to 4 pairs, with a small orbicular gland between each pair; leaflets chartaceous, 5 to 18 pairs, lanceolate-oblong or oblong, up to 3 cm. long, 11 mm. wide, usually only about 2.3 cm. long, 6.5 mm. wide, apex obtusish or acutish, base unequal, the lower side rounded, sparsely short ru-

fous-pilose on both surfaces at first with hairs densest above along midvein. Peduncles 2 to 5.5 cm. long, usually bearing a bract above middle. Flowers sessile, in globose heads about 3.5 cm. in diameter (including stamens); bractlets linear, about 3.5 mm. long at anthesis, becoming filiform and up to 1 cm. long subtending the fruits. Calyx about 4 mm. long including the triangular teeth about 0.5 mm. long, rufous-pilose at apex, glabrous otherwise. Corolla about 10 mm. long including teeth 1 mm. long, the teeth rufous-pilose, the tube glabrous; stamen tube included. Ovary very minutely puberulent or subpapillate. Legume bright red, moniliform, up to 18 cm. long, 8.5 mm. diameter, short pilose or puberulent with ferruginous hairs; the seed ellipsoid.

British Honduras: El Cayo District, Water Hole, near Vaca, on hillside, April 5, 1938, *Percy H. Gentle 2452* (type in the University of Michigan Herbarium), a shrub; Mountain Pine Ridge, San Agustin, along brook, July 24, 1936, *C. L. Lundell 6572*, a shrub, 4 m. high, 5 cm. diameter, legume bright red; Mountain Pine Ridge, May 7, 1931, *H. H. Bartlett 13092*, a shrub, 1 to 1.5 m. high. Mexico: Chiapas, Javalinero, in the Chacamax River, July 6 to 9, 1939, *Eizi Matuda 3620*, a shrub, 2 m. high; ruins of Palenque, riverside in forest, July 10 to 12, 1939, *Matuda 3693*, a shrub.

P. Gentlei has been confused with *P. Donnell-Smithii* (B. & R.) Standl. to which it bears a striking resemblance; the differences between the two species, although not pronounced, appear sufficiently important to warrant their separation. In *P. Donnell-Smithii* the bractlets subtending the flowers are linear-lanceolate, at least twice as wide as the filiform-linear bractlets of *P. Gentlei*. In fruit the persistent bractlets of *P. Gentlei* become as much as 1 cm. long, while those of *P. Donnell-Smithii* do not exceed 5 mm. The pubescence of the leaflets of *P. Donnell-Smithii* consists of minute incurved hairs; the leaflets of *P. Gentlei* are short pilose with straight hairs. Further, the leaflets of *P. Gentlei* usually are obtusish, not conspicuously acute as in the other species.

P. Gentlei also approaches *P. graciliflorum* Blake, but the latter has fewer and larger leaflets, and the corolla teeth are fully 2 mm long. The two closely agree in pubescence.

Pithecolobium (*Zygia*) **paucijugatum** Lundell, sp. nov.—Arbor. Stipulae minutae. Folia petiolata. Pinnae 1-jugae. Foliola $1\frac{1}{2}$-juga, membranacea, glabra, lanceolata vel lanceolato-oblonga, apice acuminata, basi obtusiuscula. Inflorescentiae capitatae; bracteae ca. 1.5 mm. longae. Calyx 2.8–3.2 mm. longus. Corolla usque ad 7.5 mm. longa.

A tree, branchlets slender, glabrous. Stipules minute. Petioles stout, up to 1.7 cm. long, at first puberulent with incurved hairs, glabrescent early, bearing a disk shaped gland at apex. Pinnae 1 pair; the rachis slender, canaliculate, glabrescent, with gland at apex. Leaflets 3 (an apical pair and an odd basal one), membranaceous, lanceolate or lanceolate-oblong, 4 to 11.5 cm. long, 1.5 to 4.4 cm. wide, glabrous except for a few minute hairs on petiolule, apex acuminate, the acumen often obtusish, base obtusish or acute, finely reticulate-veined. Flowers in small heads borne on slender puberulent peduncles up to 11 mm. long. Bractlets lanceolate, about 1.5 mm. long, bearing appressed reddish hairs on outside. Calyx 2.8 to 3.2 mm. long with reddish appressed hairs on teeth, otherwise glabrous. Corolla up to 7.5 mm. long, glabrous except for a few hairs on the teeth. Stamen tube subequaling corolla or slightly exserted.

Mexico: Veracruz, at Fortuño on the Coatzacoalcos River, March, 1937, *Llewelyn Williams 8290* (type in the University of Michigan Herbarium).

P. paucijugatum is probably nearest *P. scopulinum* (Brandeg.) Standl., a species with 2 or 3 pairs of strongly reticulated leaflets, and peduncles less than 5 mm. long.

Pithecolobium (*Cojoba*) **plumosum** Lundell, sp. nov.—Arbor parva, ramis crassis, ramulis ferrugineo-pilosis. Folia bipinnata, petiolata, petiolo rufo-piloso; pinnis bijugis; foliolis 8–18-jugis, lanceolato-oblongis, sessilibus, apice obtusiusculis, basi rotundatis, parce pilosis, subtus reticulatis. Infructescentiae axillares, capitatae; pedunculis usque ad 6.5 cm. longis, rufo-pilosis. Bracteae lineares, plumosae, ad 6 mm. longae, rufo-pilosae. Legumen 17 cm. longum.

A small tree, branches thick, branchlets, petioles, leaf-rachis,

and peduncles at first densely ferruginous-pilose. Petioles stout, up to 1.8 cm. long. Pinnae 2 pairs, with a small orbicular gland between each pair; leaflets chartaceous, paler beneath, 8 to 18 pairs, lanceolate-oblong, up to 3.5 cm. long, 12 mm. wide, the terminal leaflets not larger than the lower ones, apex obtusish, base unequal, the lower side rounded, short pilose or puberulent on both surfaces, the hairs on midvein longest and densest, 2- or 3-veined at base on undersurface with only the costa prominent, costa subimpressed above, veinlets conspicuously but not prominently reticulate beneath. Peduncles up to 6.5 cm. long, with bract near middle. Flowers in globose heads. Bractlets (subtending fruits) linear, up to 6 mm. long, rufous-pilose, appearing plumose. Legume red, moniliform, 17 cm. long, short rufous-pilose.

British Honduras: El Cayo District, Mountain Pine Ridge, along ravine, Feb. 21, 1931, *H. H. Bartlett 11627* (type in the University of Michigan Herbarium).

Although near *P. Gentlei* Lundell, *P. plumosum* may be readily distinguished from that species and others related to it by the conspicuous reticulation of the veinlets on the undersurface of the leaflets. Also, there are only 2 pairs of pinnae, and the leaflets are somewhat larger than those of either *P. Gentlei* or *P. Donnell-Smithii* (B. & R.) Standl. *P. sophorocarpum* Benth., a poorly known plant described as having reticulate veined leaflets, may be another closely allied species.

Pithecolobium (*Cojoba*) **Schippii** Lundell, sp. nov.—Arbor parva, ramulis ferrugineo-pilosis. Folia bipinnata, petiolata, petiolo rufo-tomentoso; pinnis 3-jugis; foliolis 9–14-jugis, oblongo-lanceolatis, sessilibus, apice acutis vel subacuminatis, basi rotundatis. Inflorescentiae capitatae; pedunculis 2.5–4 cm. longis, rufo-tomentosis. Bracteae lineari-lanceolatae. Calyx 3.7–4 mm. longus. Corolla ca. 1.2 cm. longa.

A small tree, about 9 m. high, 10 cm. diameter, branchlets rather slender, the branchlet, petiole, leaf-rachis, and peduncle short pilose-tomentose with ferruginous hairs. Petioles up to 2 cm. long. Pinnae 3-pairs; leaflets membranous, 9 to 14 pairs, oblong-lanceolate, up to 3 cm. long, 1 cm. wide, usually about 2.5 cm.

long, 7 mm. wide, apex acute or subacuminate, base unequal, oblique, the longer side rounded, persistently puberulent on both surfaces, most of the hairs slightly incurved, densest along midvein, veins evident but not conspicuous. Peduncles slender, 2.5 to 4 cm. long, bearing a bract near top. Flowers sessile, in globose heads about 4.2 cm. in diameter (including stamens); bractlets linear-lanceolate, about 4 mm. long (subtending flowers). Calyx 3.7 to 4 mm. long including short teeth, rufous-hairy at apex. Corolla about 1.2 cm. long including teeth 1 to 1.4 mm. long, tube glabrous, teeth rufous-hairy; stamen tube included. Ovary glabrous.

British Honduras: Toledo District, Temash River, in swamp forest in shade, altitude about 30 m., April 3, 1935, *W. A. Schipp 1318* (type in the University of Michigan Herbarium), a very handsome small tree, about 10 m. high, 7.5 cm. diameter, flowers white, faintly perfumed.

P. Schippii is allied to *P. Donnell-Smithii* (B. & R.) Standl. and *P. tenellum* (B. & R.) Standl. From *P. Donnell-Smithii* it may be separated immediately by its thinly membranous leaflets puberulent over both surfaces. The included stamen tube, slender nearly straight bractlets, as well as smaller leaflets, distinguish it from *P. tenellum.*

Amyris belizensis Lundell, sp. nov.—Arbor parva, ramulis novellis puberulis. Folia alterna, simplicia, glabra, breviter petiolata, lanceolata, apice attenuata, obtuse acuminata, basi acuta, integra.

A tree, 20 cm. in diameter, branchlets slender, terete, at first puberulent, the hairs on buds reddish. Petioles very short, usually about 1 mm. long, sometimes up to 2 mm. long. Leaves simple, alternate, the blades entire, membranaceous, lanceolate, 4.5 to 9.5 cm. long, 1.8 to 3.2 cm. wide, apex attenuate, obtusely acuminate, base acute, with a few scattered short hairs on margin at base, otherwise entirely glabrous, costa plane above, pale reddish brown and elevated beneath, primary veins 7 to 9 on each side, inconspicuous, veinlets obscure, reticulate. Flowers and fruits not known.

British Honduras: Belize District, on top of limestone hill at Gracie Rock on the Sibun River, Aug. 20, 1935, *Percy H. Gentle 1720* (type in the University of Michigan Herbarium).

Although only sterile specimens are available, the species is clearly distinct from all known from Mexico and Central America in its alternate, simple, subsessile, lanceolate, obtusely acuminate leaves. Mr. P. C. Standley, who has examined the material, regards the tree as a close relative of *A. attenuata* Standl.

Esenbeckia belizensis Lundell, sp. nov.—Arbor, ramulis subglabris. Folia alterna, 3- raro 2- vel 1-foliolata, longe petiolata; foliola integra, chartacea, glabra, obovato-elliptica, apice rotundata vel abrupte subacuminata, acumino late obtuso, basi acuta. Paniculae terminales, multiflorae, dense hispidulae, usque ad 24 cm. longae. Calyx adpresse hispidulus, lobis 5, ciliolatis. Petala 5, oblonga, 3.4 mm. longa, adpresse hispidula.

A tree, up to 25 m. high, 60 cm. diameter, branchlets thick, costate or subterete, at first sparsely appressed hispidulous. Leaves alternate, usually 3- rarely 2- or 1-foliolate; petioles up to 10 cm. long, essentially glabrous, the apical node sparsely appressed hispidulous; petiolules up to 1.2 cm. long, those of lateral leaflets shortest, appressed hispidulous. Leaflets chartaceous, glabrous, obovate-elliptic, 8 to 21.5 cm. long, 4 to 9 cm. wide, apex rounded or abruptly short acuminate, the acumen wide, obtuse, base acute, usually broadly cuneate, reticulation lax, costa plane above, prominent beneath, primary veins 9 to 11 on each side. Panicles terminal, many-flowered, densely hispidulous, up to 24 cm. long; pedicels 2 or 3 mm. long. Calyx appressed hispidulous, punctate, the sepals 5, broadly rounded, about 1.5 mm. long, 2 mm. wide, ciliolate. Petals 5, oblong, about 3.4 mm. long, appressed hispidulous outside. Filaments about 3 mm. long. Disk thick, lobed.

British Honduras: Stann Creek District, Middlesex, in high ridge, July 23, 1939, *Percy H. Gentle 2934* (type in the University of Michigan Herbarium), a tree, 20 cm. diameter, flowers whitish; Middlesex, in *acahual*, Oct. 27, 1939, *Gentle 3069*, a tree, 20 cm. diameter; Middlesex, altitude about 65 m., in primary forest, July

16, 1929, *W. A. Schipp 248*, a tree of upright habit, about 13 m. high, 22.5 cm. diameter. Toledo District, Camp 32, British Honduran–Guatemalan boundary survey, altitude about 850 m., in shady valley, April 14, 1934, *Schipp S-643*, a tree, about 25 m. high, 60 cm. diameter with round straight bole, wood brown, fairly tough, flowers cream, fruits green.

In *E. pentaphylla* (Macfad.) Griseb., the Jamaican species to which *E. belizensis* has close affinity, the leaves usually are 5-foliolate, rarely 3-foliolate. The 3- rarely 2- or 1-foliolate leaves and densely short-hispidulous inflorescences are the most obvious characteristics for separating *E. belizensis*.

ESENBECKIA LITORALIS Donn. Sm., *Bot. Gaz.*, 23: 242. 1897.

PANAMA: La Lajas Bridge, Panama National Highway, Aug. 2, 1940, *H. H. Bartlett and Tobias Lasser 16643*, a tree, flowers greenish white.

The tree has not been reported outside of the type locality in Costa Rica. The Panama specimens have paniculate inflorescences up to 15 cm. long; the species was originally described as having inflorescences only 5 cm. long.

Esenbeckia pilosa Lundell, sp. nov.—Arbor, ramulis velutino-pilosis. Folia alterna, trifoliolata, petiolata, pilosa; foliola chartacea, integra, obovata, apice rotundata, retusa, basi cuneata vel rotundata. Paniculae terminales, velutino-pilosae, usque ad 12.5 cm. longae. Calyx pilosus, lobis 5, ovatis, ciliatis. Petala 5, elliptica, 3 mm. longa, extus pilosa.

A tree, branchlets velutinous-pilose, rather stout. Leaves alternate, 3-foliolate, petioles velutinous-pilose, up to 7 cm. long, petiolules of terminal leaflets up to 4 mm. long, usually shorter, those of lateral leaflets very short. Leaflets entire, chartaceous, persistently pilose on both surfaces, rather sparsely so above, obovate, the terminal one 3.5 to 13.5 cm. long, 2.7 to 7 cm. wide, the lateral ones 2 to 12 cm. long, apex rounded, usually retuse, base of terminal leaflet broadly cuneate, base of lateral leaflets inaequilateral, the lower side rounded, the upper acute, conspicuously reticulate veined, the costa and veins nearly plane above, rather conspicuous beneath, primary veins 9 to 13 on each side. Panicles

terminal, velutinous-pilose, up to 12.5 cm. long (in bud). Pedicels up to 2 mm. long. Calyx densely pilose, punctate, the sepals 5, ovate, 1.5 to 1.8 mm. long, ciliate. Petals 5, elliptic, 3 mm. long, punctate, pilose outside. Filaments 2.5 mm. long, subulate. Anthers apiculate. Disk thick.

MEXICO: Oaxaca, Tehuantepec, July 26, 1936, *Eizi Matuda 596* (type in the University of Michigan Herbarium).

Zanthoxylum belizense Lundell, sp. nov.—Arbor; ramulis crassis, angulatis, stellato-puberulis. Folia imparipinnata, petiolata; foliola 7–21, chartacea, oblonga, obscure crenulata, apice abrupte acuminata, subtus stellato-puberula. Paniculae ♀ axillares vel terminales, stellato-puberulae, usque ad 15 cm. longae. Sepala 5, ciliolata. Follicula 2 (1 abortivo), ca. 5 mm. longa.

A tree, 25 cm. diameter, branchlets thick, strongly angled and furrowed, unarmed, at first densely stellate puberulent, the hairs ferruginous. Leaves imparipinnate, the petiole stout, as much as 10 cm. long, the rachis up to 36 cm. long, stellate puberulent. Leaflets 7 to 21, subsessile, the petiolules less than 4 mm. long, the blades chartaceous, oblong, 6 to 15 cm. long, 3.5 to 6 cm. wide, obscurely crenulate, apex abruptly short acuminate, base unequal, oblique, the longer side rounded, terminal leaflet cuneate at base, persistently stellate puberulent beneath, glabrate above, costa strongly impressed above, elevated beneath, primary veins prominent on lower surface, up to 24 on each side. Panicles stellate puberulent, axillary or terminal, up to 15 cm. long including peduncle as much as 5 cm. long, the peduncle and rachis thick, angled. Pedicels of fruits about 1 mm. long. Persistent calyx 5-parted, the segments triangular, about 0.4 mm. long, ciliolate. Carpels 2, one abortive. Follicles sessile, oval, about 5 mm. long.

BRITISH HONDURAS: Belize District, along creek in high ridge, Manatee, Nov. 1, 1940, *Percy H. Gentle 3431* (type in the University of Michigan Herbarium), vernacular name, *prickly yellow.*

Z. belizense is allied to *Z. microcarpum* Griseb. and related species. The stellate indument characterizes this small group.

ZANTHOXYLUM NIGRIPUNCTATUM Lundell, *Bull. Torrey Bot. Club,* 64: 551. 1937.

British Honduras: Stann Creek District, Middlesex, in second growth, altitude about 65 m., July 27, 1929, *W. A. Schipp 304*, a tree, about 9 m. high, 12.5 cm. diameter, trunk covered with large woody thorns; Middlesex, in high ridge on hilltop, July 13, 1939, *Percy H. Gentle 2902*, a tree, 20 cm. diameter, vernacular name, *prickly yellow*. El Cayo District, Cohune Ridge, in advanced forest, July 12, 1936, *C. L. Lundell 6487* (type in the University of Michigan Herbarium), a tree, 27 m. high, 40 cm. diameter, unarmed, vernacular name, *prickly yellow*. Mexico: Chiapas, ruins of Palenque, in advanced forest, July 10 to 12, 1939, *Eizi Matuda 3708*, a tree, 8 m. high, 30 cm. diameter.

The species is now represented by complete herbarium material. *Schipp 304*, in fruit, was distributed as *Z. trichilioides* Standl.

Swietenia belizensis Lundell, sp. nov.—Arbor glabra, ramulis angulatis. Folia pinnata vel imparipinnata, parva; foliola parva, 2–4–, raro 5-juga, membranacea, lanceolata, ovato-lanceolata vel ovato-oblonga, apice cuspidato-acuminata, basi acutiuscula, petiolulis 4–9 mm. longis. Paniculae axillares, ad 13 cm. longae. Pedicelli ad 2.8 mm. longi. Calyx 2.5 mm. diam., lobis late rotundatis, minute eroso-ciliolatis. Petala obovata, 4–4.5 mm. longa, ca. 2.5 mm. lata, minute eroso-ciliolatis. Discus aurantiacus. Ovarium 5-loculare.

A large tree; branchlets glabrous, at first angled and drying reddish black. Leaves glabrous, pinnate or sometimes imparipinnate, usually with 2 to 4 pairs of leaflets, rarely with 5 pairs, the petiole up to 7 cm. long, the rachis up to 17 cm. long. Leaflets membranaceous, lanceolate, ovate-lanceolate or ovate-oblong, inaequilateral, 3.5 to 11 cm. long, 1.6 to 4.6 cm. wide, apex cuspidate-acuminate, base acutish, costa plane above, elevated beneath, primary veins 6 to 9 on each side, inconspicuous, the veinlets minutely reticulate; petiolules slender, 4 to 9 mm. long. Panicles axillary, up to 13 cm. long, glabrous, the peduncle and branches compressed. Pedicels up to 2.8 mm. long. Calyx about 2.5 mm. in diameter, the lobes shallow, broadly rounded, obscurely erose-ciliolate. Petals pale yellow, obovate, 4 to 4.5 mm. long, about 2.5 mm. wide, minutely erose-ciliolate, glabrous other-

wise. Staminal tube not constricted below teeth, about 3 mm. long, glabrous, the teeth triangular-ovate, acute, not acuminate. Disk small, orange-red, crenulate. Pistil 3 mm. long; ovary nearly free, 5-celled; style thick; stigma about 1.4 mm. in diameter.

British Honduras: Stann Creek District, Stann Creek Valley, Big Eddy Ridge, in broken ridge, March 30, 1941, *Percy H. Gentle 3541* (type in the University of Michigan Herbarium), vernacular name, *broken ridge mahogany.*

S. belizensis is distinguished from the closely allied *S. macrophylla* King by its fewer and smaller membranaceous cuspidate-acuminate leaflets, by the smaller flowers, and by the acute rather than acuminate teeth of the staminal tube. In *S. macrophylla* the staminal tube is conspicuously constricted above at base of the teeth; no constriction is evident in *S. belizensis.*

S. belizensis is a remarkable addition to the rich British Honduran flora, but its discovery comes as no surprise. In 1928 the writer's Mayan laborers at Honey Camp in the Orange Walk District pointed out the species in the broken ridge there. The leaf peculiarities were noted, but fertile material was unobtainable.

Bunchosia Matudai Lundell, sp. nov.—Arbor parva, ramulis et foliis juvenilibus parce sericeis. Folia petiolata, chartacea vel subcoriacea, lineari-lanceolata, apice obtuse acuminata, basi cuneata. Pedicelli usque ad 1 cm. longi. Sepala ovato-oblonga, 2.3–2.6 mm. longa, ciliata. Petala usque ad 1 cm. longa, glabra, suberosa. Ovarium glabrum.

Small tree up to 4 m. high, 15 cm. diameter; branchlets slender, at first rather sparsely sericeous. Petioles canaliculate, rather slender, 3.5 to 6 mm. long, at first sericeous. Leaf blades chartaceous or subcoriaceous, sparsely sericeous at first, glabrescent early, linear-lanceolate, 4.5 to 9 cm. long, 1.1 to 1.9 cm. wide, apex obtusely acuminate, base cuneate, with a pair of conspicuous glands above base, costa prominent, primary veins nearly horizontal, inconspicuous. Racemes few-flowered, about 3 cm. long, sharply accrescent, at first sparsely sericeous. Pedicels up to 1 cm. long, jointed and bibracteolate below middle. Sepals ovate-oblong, 2.3 to 2.6 mm. long, ciliate, the glands large. Petals yellow, gla-

brous, up to 1 cm. long, the blade suborbicular, about 5 mm. long, emarginate at base, suberose. Stamens 10, glabrous. Ovary and style glabrous.

MEXICO: Chiapas, Mt. Ovando, altitude 2000 m., Nov. 14 to 18, 1939, *Eizi Matuda 3983* (type in the University of Michigan Herbarium); Mt. Ovando, altitude 2200 m., Nov. 14 to 18, 1939, *Matuda 3924*.

The writer is indebted to Mr. C. V. Morton for comparing the type with related species which are represented in the U. S. National Herbarium.

ACALYPHA VILLOSA Jacq., *Select. Stirp. Amer. Hisp.*, p. 254. 1763; Muell. Arg. in *Linnaea*, 34: 8. 1865. *A. flagellata* Millsp., *Field Mus. Bot.*, 2: 417. 1916.

This variable complex is represented in the University of Michigan Herbarium by collections from all parts of the Yucatán Peninsula. The writer has examined the type of *A. flagellata* (*Gaumer 1107* in Herb. Field Mus.), and no basis is evident for maintaining the species. The original description of *A. flagellata* was misinterpreted by Pax and Hoffman (*Pflanzenreich*, IV. 147, xvi: 21. 1924), for they referred the plant to the section Coryloideae, which has only 1- or 2-flowers in the pistillate inflorescence.

CROTON CAMPECHIANUS Standl., *Carnegie Inst. Wash., Publ.*, 461: 66. 1935.

MEXICO: Campeche, in low second growth near Dzibalchen, March 12, 1932, *C.L. Lundell 1398* (type collection in the University of Michigan Herbarium). Quintana Roo, Coba, east of ruins in advanced forest, June 27, 1938, *C. L. Lundell and Amelia A. Lundell 7638*, an arborescent shrub, up to 2 m. high.

The Quintana Roo collection, the second of the species, differs slightly in having the youngest leaves entirely glabrous, or bearing a few scattered appressed stellate hairs. In the Campeche material, the pubescence of the young leaves and inflorescences consists of scattered simple hairs. *C. campechianus* has affinity to *C. lucidus* L.

CROTON LUNDELLII Standl., *Carnegie Inst. Wash., Publ.*, 461: 67. 1935.

MEXICO: Campeche, Tuxpeña, Oct. 11, 1931, *C. L. Lundell 806* (type collection in the University of Michigan Herbarium), a tree; same locality, Nov. 6, 1931, *Lundell 903*, a tree, 10 m. high. Yucatán, Chichen Itzá, in low second growth covering the ruins, July 14, 1938, *C. L. Lundell and Amelia A. Lundell 7919*, a shrub, 3 m. high; south of Telchac, along road to Motul, in cactus thicket, July 25, 1938, *Lundell and Lundell 8104*, a shrub, less than 3 m. high.

This species, which approaches *C. cubanus* Muell. Arg., has been known heretofore from the type collection only.

Croton Matudai Lundell, sp. nov.—Frutex, adpresse stellato-pubescentibus. Folia petiolata, membranacea, suborbicularia, apice abrupte cuspidato-acuminata, basi rotundata. Inflorescentiae bisexuales, usque ad 3 cm. longae. Flores ♀ pedicellati, calyce usque ad 6.5 mm. longo, lobis lineari-oblongis, glanduloso-ciliatis. Flores ♂ pedicellati, staminibus 16.

A green shrub, with whitish pubescence of closely appressed stellate hairs. Branchlets slender, glabrescent early. Stipules minute, glandular toothed. Petioles sparsely appressed hairy, slender, up to 7 cm. long. Leaf blades membranaceous, suborbicular, or ovate-orbicular, 6 to 10 cm. long, 3 to 6.5 cm. wide, apex rather abruptly cuspidate-acuminate, base rounded and usually 3- rarely 5-nerved, young leaves densely appressed pubescent beneath with fine stellate hairs, very sparsely hairy on both surfaces with age, obscurely and remotely glandular toothed, irregularly repand with age, glandular at base. Racemes slender, few-flowered, bisexual, stellate-hairy, up to 3 cm. long. Pistillate flowers with pedicels up to 4 mm. long; calyx up to 6.5 mm. long, 5-lobed to base, the lobes linear-oblong, acuminate, with conspicuous stalked glands along the margins; apetalous; ovary obovoid, stellate-hairy; styles digitately 4-lobed, the lobes filiform. Staminate flowers (in bud) with pedicels about 3 mm. long; stamens 16.

MEXICO: Veracruz, Atoyac, May 14, 1937, *Eizi Matuda S-5* (type in the University of Michigan Herbarium).

C. Matudai is probably near *C. Soliman* Schl. & Cham

JATROPHA STANDLEYI Steyermark, *Field Mus. Bot.*, 22: 152. 1940.

The species is known from a single specimen (*Eizi Matuda 2260*), and this sheet, the type, is in the University of Michigan Herbarium, not in "Herb. Field Mus." as stated in the original description.

PERA ARBOREA Mutis, *Svensk. Vetensk. Akad. Handling. Stockholm*, 5: 299. 1784.

BRITISH HONDURAS: Stann Creek District, Mullins River–Stann Creek road, in broken ridge, Aug. 7, 1940, *Percy H. Gentle 3361*, a tree, 25 cm. diameter.

The species apparently has not been collected previously north of Panama.

Celastrus panamensis Lundell, sp. nov.—Frutex scandens, glaber. Folia petiolata, membranacea, ovato-elliptica, apice ut videtur obtusa, basi rotundata. Inflorescentiae paniculatae, usque ad 6 cm. longae. Pedicelli usque ad 2 mm. longi. Calyx quinquelobatus. Petala 5, oblonga, ca. 2 mm. longa. Ovarium liberum, 3-loculare, loculis uniovulatis.

A woody vine, entirely glabrous; branchlets slender, drying reddish brown. Petioles canaliculate, 1.1 to 1.3 cm. long. Leaf blades membranaceous, ovate-elliptic, 9.5 to 14 cm. long, 5 to 7.5 cm. wide, apex probably obtuse, base rounded, costa nearly plane above, prominent beneath, primary veins 7 to 8 on each side, prominulous, the margin shallowly crenate. Inflorescence paniculate, axillary and terminal, up to 6 cm. long including peduncles up to 2.5 cm. long, the branches slender, each node bibracteolate. Pedicels up to 2 mm. long. Calyx lobes broadly ovate, about 1.2 mm. long, rounded, very minutely erose. Petals oblong, about 2 mm. long, apex rounded. Filaments up to 1 mm. long. Anthers cordate, shorter than filaments. Disk thick, annular, rugose. Ovary free, 3-celled with one erect ovule in each cell; style short, thick.

PANAMA: Province of Chiriquí, on trail from Bambito to Cerro Punta, altitude 1400 to 2300 m., April 6, 1937, *P. H. Allen 319* (type in the Herbarium of Field Museum, fragment of type in the University of Michigan Herbarium).

The outstanding characteristic of the species is its large thin crenate leaf. The collection was distributed under the name "*Hippocratea volubilis* L."

EUONYMUS ATROPURPUREUS Jacq. var. **Cheatumi** Lundell, var. nov.—Frutex, 2 m. altus, 3 cm. diam. Folia glabra, petiolata, lanceolata, apice attenuata, acuminata.

Arborescent shrub, 2 m. high, 3 cm. in diameter. Petioles slender, up to 1.8 cm. long. Leaf blades entirely glabrous, lanceolate, up to 12 cm. long, apex attenuate, acuminate, base acute. Pedicels and flowers dark red, becoming red-purple when dry.

TEXAS: Dallas County, Urbandale, along wet ravine in woodland, April 24, 1940, *C. L. Lundell and Amelia A. Lundell 8550* (type in the University of Michigan Herbarium); same locality, April 17, 1940, *Lundell and Lundell 8408;* April 24, 1940, *Lundell and Lundell 8551, 8552, 8553;* June 1, 1940, *Lundell and Lundell 9207, 9208.*

The variety is distinguished by its wholly glabrous lanceolate leaves which are attenuate at the apex into a long acumen. In the typical form of the species, the leaves are ovate-elliptic or elliptic, abruptly short acuminate or acute, and persistently pubescent beneath. Intermediate forms approaching the variety, as well as the typical form, also occur in Dallas County.

It is a very great pleasure to dedicate the variety to Dr. E. P. Cheatum, my esteemed colleague at Southern Methodist University. The stand of this shrub at Urbandale has long been a point of interest to him and his students.

MAYTENUS WOODSONI Lundell, *Ann. Missouri Bot. Gard.*, 26: 291. 1939, Pl. 22. *Salacia blepharodes* Pittier, *Contrib. U. S. Nat. Herb.*, 18: 159, 1916; not *Maytenus blepharodes* Lundell. *Maytenus vulcanicola* Standl., *Field Mus. Bot.*, 22: 153. 1940.

PANAMA: Province of Chiriquí, around El Potrero Camp, Volcán de Chiriquí, at edge of forest, altitude 2800 to 3000 m., March 10 to 13, 1911, *H. Pittier 3086* (type of *Salacia blepharodes* in U. S. Nat. Herb., No. 677476), a tree, 2 to 4 m. high; Loma Larga to summit, Volcán de Chiriquí, altitude 2500 to 3380 m., July 4 to 6,

1938, *R. E. Woodson, Jr., P. H. Allen, and R. J. Seibert 1065* (type of *M. Woodsoni* in the University of Michigan Herbarium), *1088*, a tree, 3 m. high, flowers maroon; near summit, Volcán de Chiriquí, altitude 3700 m., Feb. 12, 1940, *M. E. Terry 1309* (type of *Maytenus vulcanicola* in Herb. Field Mus.); Potrero Muleto to summit, Volcán de Chiriquí, altitude 3500 to 4000 m., July 13 to 15, 1940, *R. E. Woodson, Jr. and R. W. Schery 398*, a tree, 4 m. high, flowers maroon; same locality and date, *Woodson and Schery 440*, a small tree, 6 m. high.

The types of *Salacia blepharodes* and *Maytenus vulcanicola* do not differ in any way from the type of *M. Woodsoni*.

Schaefferia lanceifolia Lundell, sp. nov.—Frutex glaber, ramulis striatis. Folia petiolata, integra, chartacea, lanceolata vel ovato-lanceolata, apice acuminata, basi subcuneata. Flores fasciculati. Pedicelli fructiferi 1.5–3 mm. longi. Sepala 4, persistentia. Fructus subglobosus vel ellipsoideus, ca. 5 mm. longus.

Shrub, about 4 m. high, glabrous; branchlets very slender, striate. Petioles 2.5 to 5 mm. long. Leaf blades entire, chartaceous or submembranaceous, ashy green, paler beneath, lanceolate or ovate-lanceolate, 4 to 6 cm. long, 1.6 to 2.5 cm. wide, apex acuminate, base subcuneate, costa elevated above as a narrow ridge, prominent beneath, primary veins 5 or 6 on each side, reticulation rather lax. Flowers fasciculate in the leaf axils. Fruiting pedicels 1.5 to 3 mm. long. Persistent sepals unequal, depressed ovate, about 0.5 mm. long, minutely erose. Fruits red, subglobose or ellipsoid, about 5 mm. long, slightly compressed, longitudinally sulcate on each side, 2-celled, 2-seeded.

Mexico: Tamaulipas, in vicinity of Marmolejo, Sierra de San Carlos, altitude about 700 m., Aug. 2, 1930, *H. H. Bartlett 10757* (type in the University of Michigan Herbarium).

S. lanceifolia approaches *S. frutescens* Jacq., and differs primarily, on the basis of material available, in having thin ashy green lanceolate leaves. In *S. frutescens* the leaves usually are oblanceolate or obovate, thicker, and yellowish when dry.

Zizyphus yucatanensis Standl., *Trop. Woods*, 32: 16. 1932. (Fig. 1).

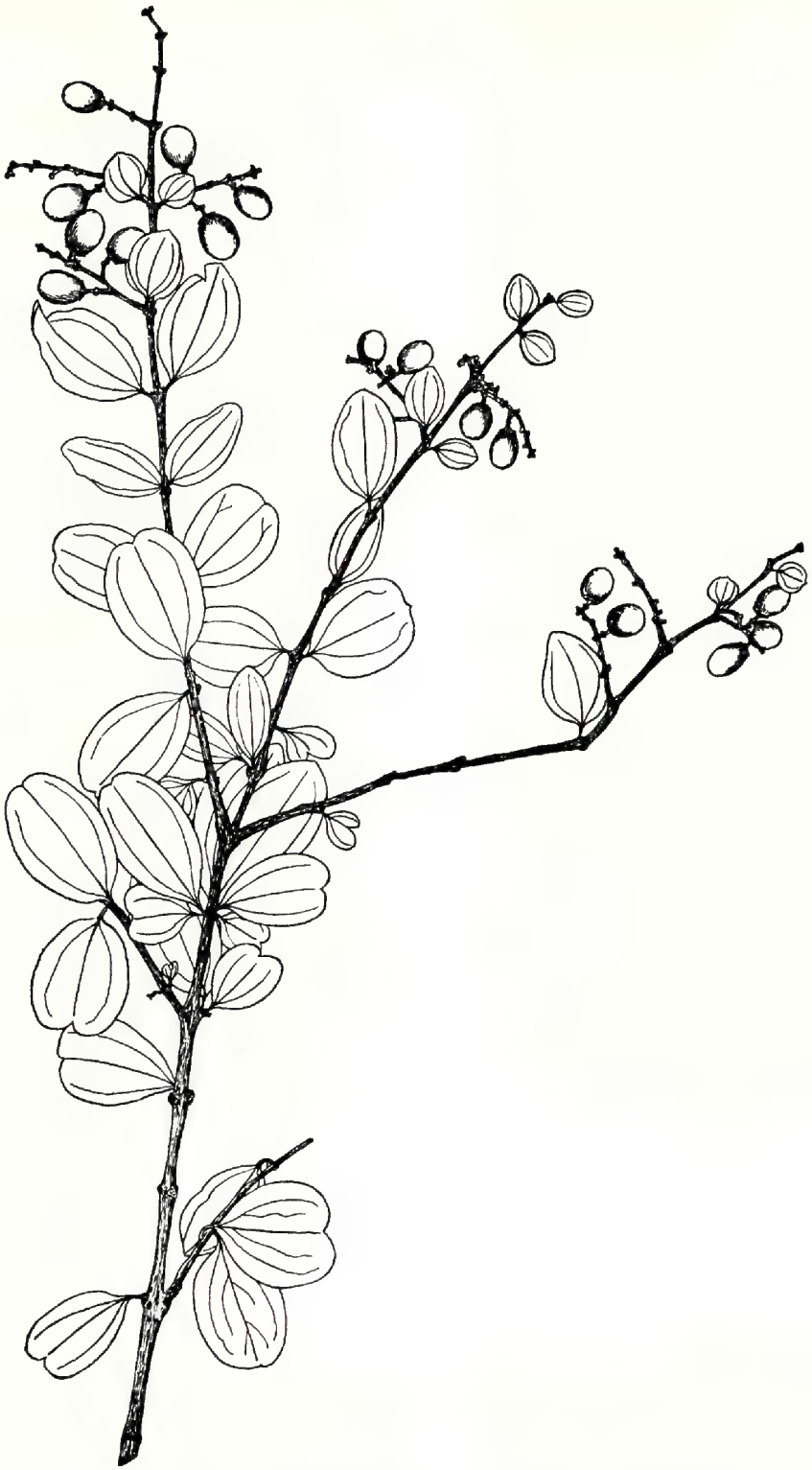

FIG. 1. *Zizyphus yucatanensis* Standl. Topotype, *Lundell and Lundell 7984*, in the University of Michigan Herbarium. Half natural size.

MEXICO: Yucatán, km. 23, Merida–Progreso road, along roadside, July 18, 1938, *C. L. Lundell and Amelia A. Lundell 7984.*

A tree, 8 m. high, branchlets with few short straight spines. Leaves obovate or elliptic, up to 4 cm. long, 2.5 cm. wide, rounded and often retuse at apex, acutish at base, entire, glabrous, 3-nerved. Infructescence paniculate, 4 cm. long, appressed hairy. Fruits ellipsoid, 1.2 cm. long, glabrous.

The species has been known only from the type collection made by R. S. Flores of Progreso in 1932.

Quararibea Gentlei Lundell, sp. nov. (Fig. 2).—Arbor, ramulis novellis minute stellato-tomentellis. Folia petiolata, chartacea, oblanceolata vel oblonga, apice obtuse acuminata, basi acutiuscula, supra glabra, subtus minute stellato-lepidota et barbata. Pedicelli fructiferi usque ad 1.2 cm. longi, crassi. Calyx campanulatus, 2–2.3 cm. longus. Fructus subglobosus, ca. 3 cm. longus.

Tree, 35 cm. diameter, wood white and moderately hard, bark whitish; branchlets and petioles minutely stellate-tomentellous, pulverulent. Petioles terete, stout, 1.6 to 2.7 cm. long. Leaf blades chartaceous, yellowish green, barbate beneath in the axils of the primary and secondary veins and sparsely stellate-lepidote, glabrous above, oblanceolate or oblong, 15 to 24 cm. long, 5.5 to 9.8 cm. wide, apex obtusely acuminate, base acutish, costa prominent beneath, primary veins 7 to 9 on each side, prominent on undersurface, reticulation lax. Fruits borne on stout pedicels up to 1.2 cm. long. Fruiting calyx campanulate, rugose, 2 to 2.3 cm. long, covered with minute pulverulent stellate tomentum. Fruits subglobose, up to 3 cm. long, covered with dense brownish stellate tomentum; 2-celled, 2-seeded.

BRITISH HONDURAS: Stann Creek District, Stann Creek Valley, Blue Mountain Valley, in high ridge, Feb. 24, 1940, *Percy H. Gentle 3236* (type in the University of Michigan Herbarium), vernacular names, *coco mama, cincho.*

Q. Gentlei is related to *Q. stenophylla* Pittier.

Tetracera belizensis Lundell, sp. nov.—Frutex scandens. Ramuli stellato-scabriusculi. Folia petiolata, chartacea, late ovato-elliptica vel elliptica, apice rotundata et apiculata, basi

FIG. 2. *Quararibea Gentlei* Lundell. Type, *Gentle 3236*, in the University of Michigan Herbarium. One-third natural size.

rotundata. Flores dioici. Inflorescentiae ♂ paniculatae, parvae, dense et minute stellato-scabriusculae, pauciflorae. Pedicelli usque ad 8 mm. longi. Sepala suborbicularia, subaequalia, 5–7 mm. longa, extus minute scabriuscula et parce strigosa, intus glabra, ciliolata. Petala obovata, glabra, usque ad 10 mm. longa. Stamina 5 mm. longa.

A woody vine. Stems slender, rather wiry, at first densely and minutely stellate-scabrid, with scattered straight appressed hairs intermixed, at length finely scabrous and brownish. Petioles sparingly strigose and minutely stellate-scabrid, canaliculate, slightly winged above, 1.2 to 2.5 cm. long. Leaf blades chartaceous, broadly ovate-elliptic or elliptic, 7 to 13 cm. long, 5.5 to 8.5 cm. wide, those in the inflorescence reduced, margin somewhat repand and bearing minute teeth terminating the main lateral veins, apex rounded and short apiculate, base rounded, both surfaces finely scabrous, the costa bearing a few straight hairs, these appressed on lower surface, spreading above, costa and veins slightly impressed above, prominent beneath, the main lateral veins 11 to 13, reticulation prominulous beneath. Flowers dioecious. Staminate flowers borne in small narrow axillary and terminal panicles, the panicles minutely stellate-scabrid, comparatively few-flowered. Pedicels slender, stellate-scabrid, up to 8 mm. long. Sepals reflexed, suborbicular, subequal, 5 to 7 mm. long, ciliolate, glabrous within, minutely scabrous outside with the outer bearing a few simple appressed hairs. Petals glabrous, obovate, up to 10 mm. long. Stamens about 5 mm. long, the filaments enlarged above. Pistillate flowers and fruits unknown.

British Honduras: Stann Creek District, Middlesex, in high ridge along creek, May 15, 1939, *Percy H. Gentle 2794* (type in the University of Michigan Herbarium), flowers white, fragrant.

Marcgravia Gentlei Lundell, sp. nov.—Frutex volubilis, ramulis crassiusculis, glaber. Folia petiolata, rigide coriacea, glabra, lanceolato-oblonga, elliptica vel obovato-oblonga, apice acuta vel obtusiuscula, basi subtruncata vel rotundata et emarginata. Inflorescentiae umbellatae, ca. 15-florae; pedicellis usque ad 2.5 cm. longis, floribus oblique insertis. Bracteae clavato-tubulosae, pedicellatae. Stamina 11 vel 12.

Woody vine, branchlets rather stout, subterete, glabrous. Petioles stout, very short, up to 3.5 mm. long. Leaf blades rigidly coriaceous, entirely glabrous, lanceolate-oblong, elliptic or obovate-oblong, 4.5 to 10 cm. long, 2.4 to 4 cm. wide, apex acute or obtusish, base subtruncate or rounded and shallowly emarginate, the sides sometimes slightly unequal, costa prominent beneath, primary veins nearly horizontal, inconspicuous. Inflorescence umbellate, the umbels usually 15-flowered; pedicels rather slender, up to 2.5 cm. long, obscurely and minutely puberulent, the flowers inserted obliquely. Bracts clavate-tubular, oblique, up to 1.6 cm. long, bearing at apex a stalked abortive flower, the pedicel up to 8 mm. long. Sepals (in bud) rigidly coriaceous, depressed ovate or subreniform, entire. Stamens 11 or 12, the filaments (in buds) broad, flat, subequaling anthers in width, abruptly contracted at apex. Ovary subovoid.

British Honduras: Stann Creek District, Stann Creek Valley, Antelope Ridge, in *mountain cabbage* palm ridge on hilltop, Jan. 28, 1940, *Percy H. Gentle 3176* (type in the University of Michigan Herbarium).

Ruyschia tremadena (Ernst.) Lundell, comb. nov. *Vargasia tremadena* Ernst., *Várgas Consid. como Bot.*, 23. 1877. *Caracasia tremadena* (Ernst.) Szyszyl., in Engl. and Prantl, *Natürl. Pflanzenfam.*, 3, 6a: 164. 1894.

In a specimen of *Caracasia tremadena* from Venezuela (*Pittier 9574* in Gray Herbarium), the petals are connate at the base and the 3 stamens are clearly adnate to the corolla; hence in these characteristics, *Caracasia* does not differ from *Ruyschia*. The bracts of the species of *Ruyschia* and *Caracasia* are essentially alike. Therefore the chief difference is in the number of stamens, one genus having 5 and the other 3, but this characteristic does not appear to be of generic importance. In *Souroubea*, which is very closely allied to *Ruyschia*, the stamen number varies from 3 to 5.

Ruyschia viridiflora (Ernst.) Lundell, comb. nov. *Vargasia viridiflora* Ernst., *Várgas Consid. como Bot.*, 23. 1877. *Caracasia viridiflora* (Ernst.) Szyszyl., in Engl. and Prantl, *Natürl. Pflanzenfam.*, 3, 6a: 164. 1894.

Clusia Gentlei Lundell, sp. nov.—Frutex epiphyticus. Folia petiolata, glabra, chartacea, parva, oblanceolata vel obovata, apice rotundata et minute apiculata, basi cuneata. Cymae ♀ terminales. Flores ♀ sessiles, bracteolis 2. Sepala 4, decussata, ovato-orbicularia, ad 4 mm. longa. Petala 4, ca. 3.8 mm. longa. Staminodia 4. Ovarium 4-loculare.

An epiphytic shrub, branchlets rather slender, furfuraceous, reddish brown. Petioles canaliculate, 3 to 6 mm. long. Leaf blades glabrous, chartaceous, oblanceolate or obovate, 4 to 10 cm. long, 1.5 to 5.2 cm. wide, apex rounded and usually minutely apiculate, base cuneate, slightly decurrent, costa plane above, elevated beneath, primary veins up to 15 on each side, strongly ascending, prominulous on both surfaces. Staminate flowers unknown. Pistillate flowers sessile in terminal cymes, 9 or less in each inflorescence. Bracts coriaceous, triangular-ovate, keeled, up to 2 mm. long. Bracteoles 2 at base of calyx, suborbicular, about 2.2 mm. long. Sepals 4, decussate, ovate-orbicular, keeled, the outer 2 about 3 mm. long, the inner 2 about 4 mm. long. Petals 4, ovate-orbicular, about 3.8 mm. long. Staminodia 4, free, 2.5 mm. long, the anthers 2-celled, apex emarginate. Ovary 4-celled; stigmas 4, slightly elevated.

British Honduras: Stann Creek District, Stann Creek Valley, Leoniel Valley, in high ridge on hill top, Feb. 15, 1941, *Percy H. Gentle 3512* (type in the University of Michigan Herbarium), vernacular name, *matapalo*.

C. Gentlei, which belongs to the section Stauroclusia, is notable for its small thin leaves with comparatively short petioles, and small sessile 4-merous pistillate flowers.

Casearia randioides Lundell, sp. nov. (Fig. 3).—Frutex vel arbor parva, ramulis puberulis. Folia parva, fasciculata, breviter petiolata, glabra, chartacea, obovata, apice rotundata et retusa, basi cuneata, subintegra vel integra. Flores solitarii vel geminati, pedicellis ca. 2 mm. longis. Calyx puberulus, ca. 3.5 mm. longus, segmentis oblongo-ellipticis. Stamina 10, parce pilosa; staminodia dense pilosa.

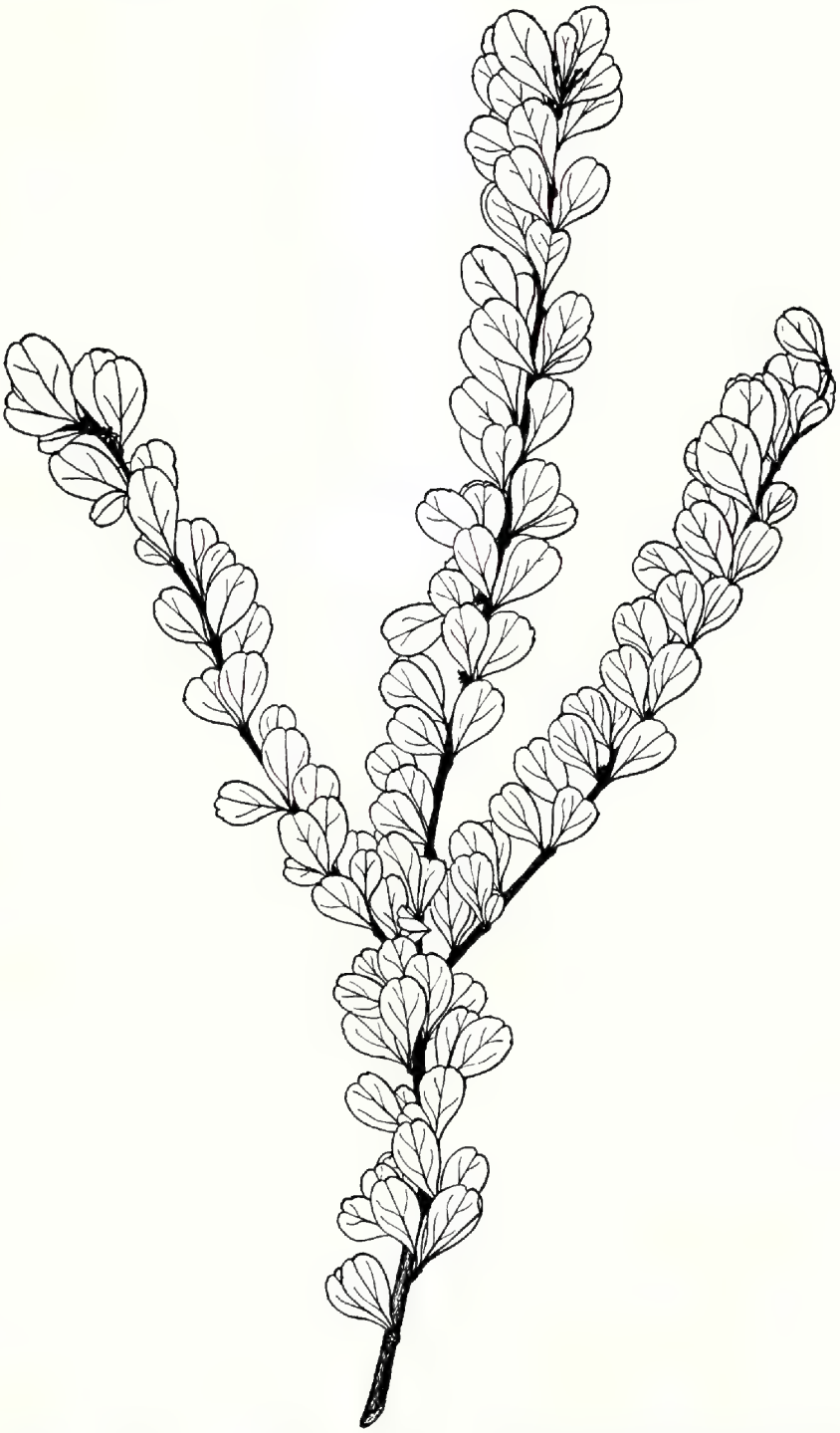

FIG. 3. *Casearia randioides* Lundell. Type, *Lundell and Lundell 7982*, in the University of Michigan Herbarium. Half natural size.

Shrub or small tree with erect branches, branchlets stout, erect or suberect, puberulent, internodes short, unarmed. Leaves fasciculate at the nodes, subsessile or with petioles up to 1.5 mm. long, glabrous. Leaf blades chartaceous, obovate, 1 to 2.7 cm. long, 0.8 to 1.8 cm. wide, apex rounded, retuse, base cuneate, margin with 1 to 3 small remote teeth above the middle or entire, at first sparsely puberulent above along the costa, otherwise entirely glabrous, linear punctate, costa and veins prominulous, primary veins 3 or 4 on each side, ascending. Flowers greenish, solitary or geminate on the leafy nodes. Pedicels about 2 mm. long, jointed at the middle, the basal half appressed puberulent. Calyx puberulent, about 3.5 mm. long, 5-lobed almost to base, the lobes oblong-elliptic, rounded at apex. Stamens 10, sparsely pilose, alternating with 10 densely pilose staminodia, about 2.4 mm. long including basal tube. Ovary glabrous, ellipsoid, attenuate into the thick pilose style; stigma capitate, entire.

Mexico: Yucatán, km. 20, Merida–Progreso road, in dry thicket, July 18, 1938, *C. L. Lundell and Amelia A. Lundell 7982* (type in the University of Michigan Herbarium).

C. randioides does not remotely resemble any other Mexican or Central American species known to the writer. It is strikingly like certain Yucatán species of *Randia* in habit and leaf form, and this has undoubtedly confused collectors. *C. randioides* belongs to the section Pitumba and has affinity to *C. Ehrenbergiana* Urb. of the West Indies.

Casearia subsessiliflora Lundell, sp. nov.—Arbor parva, ramulis puberulis. Folia petiolata, membranacea, minute serrulata, lanceolato-oblonga vel lanceolata, apice acuminata, basi acuta. Flores fasciculati, pedicellis usque ad 1.5 mm. longis. Calyx ca. 3 mm. longus, lobis oblongis. Stamina 10. Filamenta pilosa.

A small tree, about 4 m. high, 4 cm. in diameter, branchlets slender, whitish, densely puberulent with minute incurved hairs. Petioles slender, puberulent, 2.5 to 4 mm. long. Leaf blades membranaceous, pellucid-punctate, puberulent above along the midvein, entirely glabrous otherwise, obscurely serrulate, lanceolate-oblong or lanceolate, 3.5 to 8 cm. long, 1.4 to 2.7 cm. wide,

apex acuminate, base acute, finely reticulate veined, costa conspicuous beneath, elevated as a narrow ridge above, primary veins 8 to 11 on each side, inconspicuous. Flowers few, fasciculate in the leaf axils, subsessile, subtended by thinly membranaceous puberulent bracts. Pedicels up to 1.5 mm. long, slender, jointed below base of flower, puberulent. Calyx about 3 mm. long, puberulent, deeply 5-lobed, lobes oblong or obovate-oblong, rounded at apex. Stamens 10, included, filaments pilose. Staminodes pilose, about half as long as stamens. Ovary ovoid, glabrous, gradually attenuate into the thick style, basal two-thirds of style short pilose; stigma capitate.

MEXICO: Quintana Roo, Coba, in advanced forest east of the ruins, July 5, 1938, *C. L. Lundell and Amelia A. Lundell 7824* (type in the University of Michigan Herbarium).

C. subsessiliflora, which belongs to the complex of *C. sylvestris* Sw., is allied to *C. formosa* Urb. of Cuba.

EUGENIA FLORIBUNDA West, ex Willd. *Sp. Pl.*, 2: 960. 1800.

MEXICO: Chiapas, Mt. Madre Vieja, altitude 1000 m., June, 1938, *Eizi Matuda 2519*, a small tree, 3.5 m. high, 15 cm. diameter.

The collection agrees in all characteristics with *E. L. Ekman 7414* from Cuba, which was referred by Ekman and Urban to the species. *E. floribunda*, which ranges through the West Indies southward into Brazil, apparently has not been reported previously from Mexico.

Clethra Kenoyeri Lundell, sp. nov.—Arbor. Ramuli crassi, rufotomentosi. Folia petiolata, chartacea, obovata vel oblanceolata, apice acuta, basi emarginata, supra subglabra, subtus dense rufopilosa. Racemi ad apicem ramuli fasciculati 9 vel 10.

A giant tree, about 1 m. in diameter. Branchlets thick, densely tomentose with reddish brown hairs. Petioles stout, tomentose, 7 to 12 mm. long. Leaf blades chartaceous, obovate or oblanceolate, 6 to 16 cm. long, 3 to 7 cm. wide, apex acutish, base narrowed, sides usually subequal, shallowly emarginate or rounded, stellate hairy above at first but nearly glabrous with age except along the costa and veins, persistently stellate-pilose beneath with

reddish brown hairs, tomentose along costa and veins, costa prominent beneath, primary veins 15 or 16 on each side, impressed on upper surface, prominent beneath, margin entire or remotely and obscurely serrulate above middle of blade. Racemes 9 or 10, short, stout, densely tomentose with dark reddish brown hairs, up to 11 cm. long in bud; bracts subulate, reddish tomentose, up to 6 mm. long. Flower buds white tomentose.

MEXICO: Hidalgo, on mountain side near Chapulhuacan, Aug. 27, 1940, *L. A. Kenoyer C-228* (type in the University of Michigan Herbarium).

The dark reddish brown tomentum is noteworthy. In the absence of fully developed flowers, the relationship of the species is difficult to determine, but its affinity appears to be with *C. mexicana* DC.

ARDISIA NIGRESCENS Oerst., *Nat. For. Kjöbenhavn Vid. Medd.*, 1861, p. 130, Pl. 2. 1861.

MEXICO: "Plantae Novae Hispaniae," 1787–1795–1804, *Sessé, Mociño, Castillo, and Maldonado 679 and 730* (in herb. of the Botanical Garden of Madrid; fragments in the University of Michigan Herbarium). San Luis Potosí, Tamazunchale, in second growth on hillside, altitude 200 m., July 10, 1937, *C. L. Lundell and Amelia A. Lundell 7130*, a shrub, fruits bright red.

The species is rare, at least in herbaria, and these additional collections are worth recording.

ARDISIA (*Graphardisia*) SEIBERTII Standl., *Ann. Missouri Bot. Gard.*, 24: 198. 1937.

PANAMA: Province of Coclé, El Valle de Antón and vicinity, altitude 500 to 700 m., July 23 to 27, 1935, *R. J. Seibert 456* (type in Herb. Field Mus.), flowers white; vicinity of El Valle, altitude 800 to 1000 m., Dec. 22, 1936, *P. H. Allen 72* (in Herb. Field Mus.), a small tree, 3 m. high, fleshy calyx pink; vicinity of El Valle, altitude 800 to 1000 m., Sept. 5, 1938, *Allen 786*, a small tree, 2 m., flowers pale pink; between Las Margaritas and El Valle, July 15; Aug. 8, 1938, *R. E. Woodson, Jr., P. H. Allen, and R. J. Seibert 1239*, a tree, 8 m. high, calyx and pedicel white,

corolla pink; same locality and date, *Woodson, Allen, and Seibert 1746*, a shrub, 3 m. high, petals white, faintly lavender tinged; north rim of El Valle, June 4, 1939, *P. H. Allen and A. H. G. Alston 1846*, a small tree, 4 m. high, flowers pale lavender. Province of Panama, summit of Cerro Campana, altitude 800 to 1000 m., Sept. 1, 1940, *Allen 2226*, a small tree, 3 m. high, flowers pink.

The species is very close to *A. opegrapha* Oerst. and may be conspecific.

Parathesis psychotrioides Lundell, sp. nov.—Ramuli crassiusculi, angulati. Folia petiolata, membranacea, integra, oblanceolato-elliptica, apice acuminata, basi cuneata, supra glabra, subtus parce lepidota et adpresse tomentella. Inflorescentiae axillares, paniculatae, ad 11 cm. longae, puberulae. Pedicelli 3.5–5 mm. longi. Sepala triangulari-lanceolata, 1.8–2 mm. longa, puberula, ciliata, punctata. Petala lineari-lanceolata, 5 mm. longa, extus puberula, intus tomentosa, punctata. Stamina ca. 3.5 mm. longa. Ovarium cum stylo pilosum. Bacca globosa, costata, ca. 5 mm. diam.

Probably a shrub, branchlets rather stout, angled, at first appressed-tomentellous, glabrous below the terminal nodes. Petioles canaliculate, 1.5 to 2 cm. long, at first appressed-tomentellous. Leaf blades membranaceous, slightly paler beneath, margin inconspicuously undulate, entire, oblanceolate-elliptic, 13 to 20 cm. long, 5 to 7.3 cm. wide, apex short acuminate, the acumen obtusish, base cuneate, decurrent, costa impressed above, prominent beneath, primary veins 14 to 18 on each side, slightly impressed above, conspicuous on undersurface, ascending at a wide angle, sparsely lepidote beneath and at first appressed-tomentellous, essentially glabrous with age. Inflorescence axillary, paniculate, up to 11 cm. long, at first puberulent. Pedicels 3.5 to 5 mm. long, puberulent, the hairs unequal. Sepals triangular-lanceolate, 1.8 to 2 mm. long, puberulent, ciliate, linear-punctate. Petals linear-lanceolate, 5 mm. long, puberulent outside, tomentose within, linear-punctate. Stamens about 3.5 mm. long; filaments slender, slightly shorter than anthers; anthers sagittate, the basal lobes and apex obtuse, concolorous or punctate with 1 to 3 small

reddish dots on dorsal side. Apex of ovary and base of style short pilose, the style 3.5 mm. long, linear-punctate. Berries globose, costate, about 5 mm. in diameter.

Mexico: Veracruz, Cordoba, January, 1904, *C. A. Purpus* (type in the University of California Herbarium, No. 105834).

P. psychotrioides appears to be near *P. Matudai* Lundell. It differs from the latter in the ample paniculate inflorescence, shorter pedicels, calyx twice as large, and anthers concolorous or inconspicuously reddish punctate.

Parathesis Skutchii Lundell, sp. nov.—Frutex, ramulis glabris, angulatis, crassiusculis. Folia petiolata, chartacea, crenulata, glabra, oblongo-lanceolata, apice acuminata, basi cuneata. Inflorescentiae axillares, paniculatae, ad 15 cm. longae, tomentellae. Pedicelli 3–3.5 mm. longi. Sepala triangularia, 0.5–0.7 mm. longa, punctata, tomentella. Petala extus tomentella, intus tomentosa, oblongo-lanceolata, ca. 4 mm. longa, punctata. Stamina 2 mm. longa. Ovarium cum stylo tomentellum.

A shrub, about 6 m. high, branchlets glabrous, angled, rather stout. Petioles canaliculate, 1.5 to 2 cm. long. Leaf blades thinly chartaceous, crenulate, entirely glabrous, oblong-lanceolate, 13.5 to 19 cm. long, 3.3 to 5.5 cm. wide, apex acuminate, base cuneate, decurrent, costa slightly impressed above, prominent beneath, the primary veins 15 to 18 on each side, arcuately ascending at a wide angle, prominulous beneath, less conspicuous above. Inflorescence axillary, paniculate, up to 15 cm. long, the peduncle and branches angled, rather stout, minutely tomentellous, many-flowered, the flowers small, white, the buds scarcely 3 mm. long at anthesis. Pedicels 3 to 3.5 mm. long. Calyx tomentellous, 1 to 1.3 mm. long, the sepals triangular, 0.5 to 0.7 mm. long, punctate. Petals tomentellous outside, tomentose within, united at base, oblong-lanceolate, about 4 mm. long, linear-punctate. Stamens 2 mm. long; filaments stout, somewhat shorter than anthers; anthers subsagittate, the basal lobes truncate and slightly emarginate, attenuate to an acute apex, concolorous or dorsally punctate with 1 to 3 small black dots. Ovary and base of style tomentellous; style linear-punctate, about 2.5 mm. long.

GUATEMALA: Department of Quiché, Nebaj, in a remnant of the cloud forest, altitude about 2500 m., Nov. 16, 1934, *A. F. Skutch 1681* (type in Herb. Field Mus.).

P. Skutchii is allied to *P. melanosticta* (Schlecht.) Hemsl. It is amply distinguished by its glabrous branchlets, more intricately branched and compact inflorescence, shorter pedicels, smaller flowers, and anthers concolorous or with few dorsal dots.

Sideroxylon belizense Lundell, sp. nov.—Arbor, ramulis junioribus rufo-sericeis. Folia petiolata, coriacea, elliptica, apice obtuse subacuminata, basi acuta. Flores fasciculati, glabri, pedicellis 3–5 mm. longis, Sepala 5, coriacea, suborbicularia, 2–2.5 mm. longa. Corolla 7 mm. longa. Staminodia 5, ligulata, dentato-laciniata, 1 mm. longa. Ovarium glabrum, 5-loculare.

A tree, about 15 m. high, 25 cm. in diameter, branchlets inconspicuously angled, at first rufo-sericeous, glabrous very early. Petioles slender, glabrous, up to 2 cm. long, canaliculate above middle. Leaf blades rather rigidly coriaceous, at first subsericeous along costa beneath, glabrous otherwise, elliptic, 4 to 7.5 cm. long, 1.7 to 4 cm. wide, apex obtusely subacuminate, base acute, costa impressed above, prominent beneath, primary veins slender, 10 to 14 on each side, plane but evident above, prominulous beneath. Flowers white, glabrous, fasciculate on old wood; pedicels rather stout, 3 to 5 mm. long, sometimes bearing a small bract at middle. Sepals 5, coriaceous, subequal, suborbicular, 2 to 2.5 mm. long. Corolla glabrous, 7 mm. long, the tube narrow, 2 mm. long, the lobes 5, ovate-elliptic, cordate at base, rounded at apex. Filaments about 4 mm. long, borne at apex of corolla tube, opposite the lobes. Anthers 2 mm. long, exserted. Staminodia 5, ligulate, 1 mm. long, dentate-laciniate. Ovary glabrous, 5-celled. Style stout, short, about 1.7 mm. long.

BRITISH HONDURAS: Toledo District, Camp 32, British Honduran-Guatemalan boundary survey, altitude about 650 m., March 15, 1934, *W. A. Schipp 1269* (type in the University of Michigan Herbarium), a large tree with rather dense compact crown, a common species inland in hill forest, flowers white, fruit yellow at maturity.

The collection has been referred by Mr. P. C. Standley to *Lucuma belizensis* Standl. The latter, described from a sterile twig, may be conspecific, but minor leaf differences, particularly the petiole length and thickness of blade, indicate that another species may be represented. Since *Schipp 1269* is referable to *Sideroxylon*, its description as a new species seems preferable to a doubtful new combination.

Sideroxylon calophylloides Lundell, sp. nov.—Arbor, ramulis angulatis, adpresse tomentellis. Folia petiolata, chartacea, linearioblonga vel oblanceolato-oblonga, apice abrupte acuminata, acumine obtuso, basi cuneata, parallelivenosis, venis numerosis. Flores in axillis fasciculati, pedicellis 5–10 mm. longis. Sepala 5, vel raro 6, ferrugino-tomentella, ovata, 3–3.5 mm. longa, ciliata. Corolla glabra, 6 mm. longa. Staminodia ligulata. Ovarium 5-loculare.

A tree, 20 m. high, 50 cm. in diameter, branchlets angled, with short internodes, tomentellous with closely appressed hairs, usually ferruginous. Petioles tomentellous, 7 to 13 mm. long, canaliculate. Leaf blades chartaceous, glabrous except for a few reddish appressed hairs along costa beneath, linear-oblong or oblanceolate-oblong, 5.5 to 12 cm. long, 1.5 to 3.7 cm. wide, apex abruptly acuminate, the acumen obtuse, base cuneate, costa impressed above, prominent beneath, the veins numerous, slender, parallel. Flowers white, fasciculate in the leaf axils and at the defoliated nodes. Pedicels slender, 5 to 10 mm. long, tomentellous, the hairs appressed. Calyx appressed tomentellous with ferruginous hairs, 5- or 6-parted, the sepals ovate, subequal, the inner slightly larger, 3 to 3.5 mm. long, obtuse, ciliate. Corolla glabrous, 6 mm. long, the tube 2 to 2.5 mm. long, the lobes 5, oblong, rounded or subtruncate at apex. Stamens 5, borne at apex of tube opposite the lobes; filaments 1 to 1.5 mm. long; anthers ovoid, about 0.8 mm. long. Staminodia 5, ligulate, equaling stamens, with a few hairs at apex. Ovary pubescent, 5-celled; style glabrous, stout, 5 mm. long.

Mexico: Chiapas, Mt. Ovando, in virgin forest, altitude 900 m., July 1 to 16, 1940, *Eizi Matuda 4195* (type in the University of Michigan Herbarium).

The numerous slender veins of the leaves are closely parallel, and *S. calophylloides* is remarkable for this peculiarity.

Buddleia Skutchii Morton, *Phytologia*, 1: 148. 1935. *Buddleia Matudae* Standl., *Field Mus. Bot.*, 22: 96. 1940.

The isotype of *B. Skutchii* (*Skutch 269*) closely agrees with the isotype of *B. Matudae* (*Matuda S-185*). The Skutch collection from Guatemala has leaves entire or rarely with occasional minute marginal teeth, whereas the Chiapas material has leaves subentire or crenulate. The inflorescences are identical, but the flowers of the Matuda collections are slightly larger, due probably to age. These minor differences can scarcely be considered of specific importance.

In the original description of *B. Matudae*, Standley erroneously cites "*Matuda S-085*" as the type; the type collection is *Matuda S-185* from Mt. Ovando, Chiapas.

Russelia maculosa Lundell, sp. nov.—Herba, ramis ramulisque 4-angularibus, pubescentibus. Folia opposita, breviter petiolata, chartacea, parce pubescenti, resinoso-punctata, serrata, ovata, apice acuta, basi rotundata. Calyx punctatus, lobis lanceolato-subulatis, 6 mm. longis. Corolla maculosa, usque ad 1.3 cm. longa. Capsula 3–5 mm. longa, glabra.

A clambering perennial herb, up to 2 m. tall, with few slender branches; stems sharply quadrangular, the angles persistently hairy. Leaves opposite. Petioles pubescent, up to 4 mm. long. Leaf blades chartaceous, rather sparsely pubescent on both surfaces, conspicuously resinous-punctate, especially beneath, ovate, 1.5 to 3.2 cm. long, 1 to 2.5 cm. wide, apex acute, base usually rounded, costa and primary veins impressed above, elevated beneath, the primary veins 3 to 5 on each side, conspicuously serrate above base. Peduncles solitary, axillary, quadrangular, up to 4 mm. long, 2- to 5-flowered, bractlets subtending pedicels setaceous-subulate, persistent, up to 4 mm. long; pedicels 2 to 4 mm. long, resinous-punctate, the peduncles, bractlets and pedicels rather sparsely hairy. Calyx lobes lanceolate-subulate, almost setaceous, 6 mm. long, sparsely hairy and resinous-punctate. Corolla variegated maroon, pink and white, up to 1.3 cm. long,

bilabiate, essentially 4-lobed, the lower lobes rounded, the upper one emarginate, glabrous outside, barbate in throat, glandular-pilose within at base. Capsule ovoid, glabrous, 3 to 5 mm. long; style long, persistent.

Mexico: San Luis Potosí, on ledges of limestone cliff along highway above Tamazunchale, July 14, 1937, *C. L. Lundell and Amelia A. Lundell 7231* (type in the University of Michigan Herbarium).

The plant is well marked by its long subsetaceous calyx lobes and small maculose corolla.

Russelia Pennelliana Lundell, sp. nov.—Herba, ramulis 4- vel 6-costatis, glabris. Folia opposita vel ternata, breviter petiolata, chartacea, resinoso-punctata, glabra, dentata, ovato-elliptica vel late elliptica, apice acutiuscula vel obtusa, basi rotundata. Calyx punctatus, lobis ovatis, acuminatis, usque ad 3.8 mm. longis. Corolla rubra, 1.6–2 cm. longa.

Perennial herb, 1 to 1.5 m. high, much branched; stems 4- or 6-ribbed, hairy at the nodes, otherwise essentially glabrous. Leaves opposite or ternate. Petioles hairy above, usually about 1.5 mm. long, up to 3.5 mm. long. Leaf blades chartaceous, conspicuously resinous-punctate, glabrous except for a few hairs along the costa at base on upper surface, ovate-elliptic or broadly elliptic, up to 1.8 cm. long, 1.2 cm. wide, apex acutish or obtuse, base rounded, with few coarse teeth above middle, costa and veins impressed above, conspicuous beneath, primary veins 2 or 3 on each side. Peduncles solitary, axillary, few-flowered, glabrous except at the apical node, usually short, but sometimes up to 7 mm. long, subtended by leafy bracts. Bractlets subtending the pedicels subsetaceous, up to 3.5 mm. long, ciliate, resinous-punctate. Pedicels slender, resinous-punctate, up to 5.5 mm. long. Calyx lobes ovate, unequal, up to 3.8 mm. long, acuminate but not subulate, resinous-punctate. Corolla bright red, glabrous outside, barbate within on lower side, 1.6 to 2 cm. long, 4-lobed, the lower 3 lobes rounded, slightly longer than the emarginate upper lobe.

Mexico: Tamaulipas, along roadside on Mesa de Llera, July 17, 1937, *C. L. Lundell and Amelia A. Lundell 7288* (type in the University of Michigan Herbarium).

This very striking plant with much reduced leaves and large bright red corollas is well worthy of cultivation. Specimens of both *R. maculosa* and *R. Pennelliana* have been examined by Dr. Francis W. Pennell, and it is a pleasure to name one of the species for him.

Russelia tabascensis Lundell, sp. nov.—Herba, ramulis 4- vel 6-costatis, glabris vel subglabris. Folia opposita, breviter petiolata, membranacea, serrato-dentata, late ovata vel ovato-rotundata, apice subacuminata, acuta vel rotundata, basi rotundata, resinoso-punctata, parce hirtella. Calyx punctatus, lobis 3–4 mm. longis, ovatis, apice subulatis. Corolla usque ad 1.3 cm. longa. Stamina didyma, filamenta 5 vel 7 mm. longa. Capsula 5–6 mm. longa.

Perennial herb, much branched, main stem 6-ribbed, branchlets 4-ribbed, excepting the hirsute nodes essentially glabrous. Leaves opposite, subsessile, the petioles white barbate above, scarcely 1 mm. long. Leaf blades membranaceous, broadly ovate or ovate-rounded, up to 3.5 cm. long, 3.2 cm. wide, apex subacuminate, acute or nearly rounded, base rounded, serrate-dentate above base, costa and veins impressed above, prominent beneath, primary veins 4 to 7 on each side, veinlets reticulate, conspicuously resinous-punctate, barbate at base above, and bearing a few scattered hairs on costa, veins and margin. Peduncles axillary, solitary, subglabrous, hairy at apical node, up to 6 mm. long. Bractlets linear, about 3 mm. long, hirtellous and sparsely resinous-punctate. Pedicels resinous-punctate, up to 5.5 mm. long in flower, slightly accrescent in fruit. Calyx lobes 3 to 4 mm. long, ovate, acuminate, subulate above the middle, resinous-punctate, rarely with a few marginal hairs. Corolla red, tubular, up to 1.3 cm. long, glabrous outside, barbate within at base and to apex of tube on lower side, glandular-pilose on lower lobes and in upper part of tube, the upper lobe emarginate, 2 mm. long, the 3 lower lobes ovate or oblong, rounded at apex, 2.5 mm. long. Stamens didymous, the shorter filaments 5 mm. long, the longer 7 mm. long, staminode less than 1 mm. long. Capsule ovoid, 5 to 6 mm. long, glabrous, 2-costate, crowned by the persistent style.

Mexico: Tabasco, in savanna near Estapilla north of Teno-

sique, June 27, 1939, *Eizi Matuda 3524* (type in the University of Michigan Herbarium).

R. tabascensis is very near *R. flavoviridis* Blake of Guatemala, and further collections may show that it represents only a form of that species. From *R. flavoviridis* it apparently differs in having somewhat larger often subacuminate leaves, longer subulate tipped calyx lobes, and didymous stamens with filaments 5 or 7 mm. long.

Glockeria glabra Leonard, sp. nov. (Fig. 4).—Herba, caulibus subteretibus, glabris. Lamina foliorum ovata vel elliptica, acuminata, basi angustata, in petiolum decurrens, glabra vel parce hirtella; folia summa minora sessilia vel subsessilia, basi rotundata vel subcordata. Thyrsus terminalis, floribus multis. Bracteae subulatae. Calyx glaber, segmentis linearibus. Corolla subglabra, bilobata, labio superiore ovato, rotundato, erecto, inferiore trilobato, lobis emarginatis. Ovarium glabrum.

Herb; stem subterete, glabrous. Lower leaves petioled, the blades ovate to elliptic, up to 12 cm. long and 5 cm. wide, acuminate, narrowed at base and decurrent on the petiole, thin, glabrous or sparingly hirtellous, the costa and lateral veins (6 to 8 pairs) slender, the cystoliths scattered, minute and inconspicuous; uppermost leaves smaller than the lower, sessile or subsessile, rounded or subcordate at base; petioles up to 5 cm. long, grooved, the margins sparingly pubescent. Flowers numerous, borne in a terminal thyrse up to 14 cm. long and about 6 cm. in diameter toward base, the branches glabrous; bracts subulate, 1.5 to 3 mm. long, glabrous. Calyx 5 to 8 mm. long, glabrous, the segments linear, about 0.5 mm. wide at base. Corolla 23 mm. long, glabrous or with a few scattered hairs, saccate, about 2 mm. in diameter at base, abruptly enlarged 3 or 4 mm. above the base to a diameter of about 7 mm., about 5 mm. at throat, the posterior lip erect, ovate, 3.5 mm. long, 2 mm. wide, rounded, the anterior lip 3-lobed, the lobes about 1 mm. long, the middle lobe slightly wider than long, emarginate, the lateral ones about 3 mm. wide. Stamens 2.5 cm. long, glabrous, purple, exserted, the anthers 3.5 mm. long. Ovary glabrous; fruit not seen.

Mexico: Chiapas, Mt. Paxtal ("Pasitar"), Aug. 4, 1937, *Eizi*

FIG. 4. *Glockeria glabra* Leonard. Type, *Matuda S-212*, in the U. S. National Herbarium. Inflorescence and uppermost leaves, half natural size.

Matuda S-212 (type in the U. S. National Herbarium, No. 1,791,336; duplicate in the University of Michigan Herbarium). Represented also by *Matuda 1656* from the same locality.

The present species, which apparently is not closely related to any other Mexican member of the genus, is easily recognized by its dense glabrous thyrse of relatively large flowers. The color of the corolla is not evident in the dried material, but was probably purple proximally and white or yellow distally.

Justicia cobensis Lundell, sp. nov.—Herba. Folia parva, petiolata, chartacea, ovata vel elliptica, apice acuta, basi abrupte acuta, glabrata. Spicae terminales vel axillares, ad 9 cm. longae. Bracteae et bracteolae subulatae; calycis laciniae 4, subulatae, ca. 6 mm. longae. Corolla glabra, 12 mm. longa, labio superiore bidentato, inferiore trilobo.

A low perennial herb, stems ascending, rooting at the lower nodes, terete or nearly so, pilosulous in a single line, the hairs incurved. Petioles slender, hairy above, up to 5 mm. long. Leaf blades chartaceous, at first pilosulous above along the costa and at apex with incurved hairs, otherwise glabrous, ovate or elliptic, 2.8 to 5 cm. long, 1.2 to 3.2 cm. wide, apex acute, base abruptly acute and slightly decurrent, somewhat paler beneath, the older leaves drying with a bluish metallic luster, primary veins 4 to 6 on each side, evident on both surfaces. Flowers borne in terminal and axillary few-flowered spikes up to 9 cm. long, these simple, the peduncle and rachis pilosulous along a single line. Bracts keeled, triangular-subulate, about 2 mm. long, bractlets slightly smaller. Calyx segments 4, subulate, keeled, about 6 mm. long, subequal, the margin subentire. Corolla bluish-lavender, entirely glabrous without, 12 mm. long, lips slightly longer than tube, the upper bidentate, the lower 3-lobed, the lobes rounded, up to 3 mm. long. Anther cells unequally attached. Ovary glabrous. Capsules glabrous, about 8 mm. long, 4-seeded, the seeds verrucose.

Mexico: Quintana Roo, Coba, on floor of advanced forest east of ruins, June 27, 1938, *C. L. Lundell and Amelia A. Lundell 7642* (type in the University of Michigan Herbarium).

J. cobensis has affinity to *J. breviflora* (Nees) Rusby.

Ruellia Matudae Leonard, sp. nov. (Fig. 5).—Herba, caulibus quadrangularibus puberulis alatis. Lamina foliorum lanceolata, acuta, basi rotundata, integra vel undulata, dense puberula. Paniculae axillares dichotomae, floribus secundis erectis; pedunculi puberuli quadrangulares; bracteae lineares. Calyx puberulus, segmentis subulatis. Corolla rubra, hypocrateriformis, parce pubescens, lobis obovatis, emarginatis. Ovarium puberulum.

A slender herb; stems quadrangular, striate, sparingly puberu-

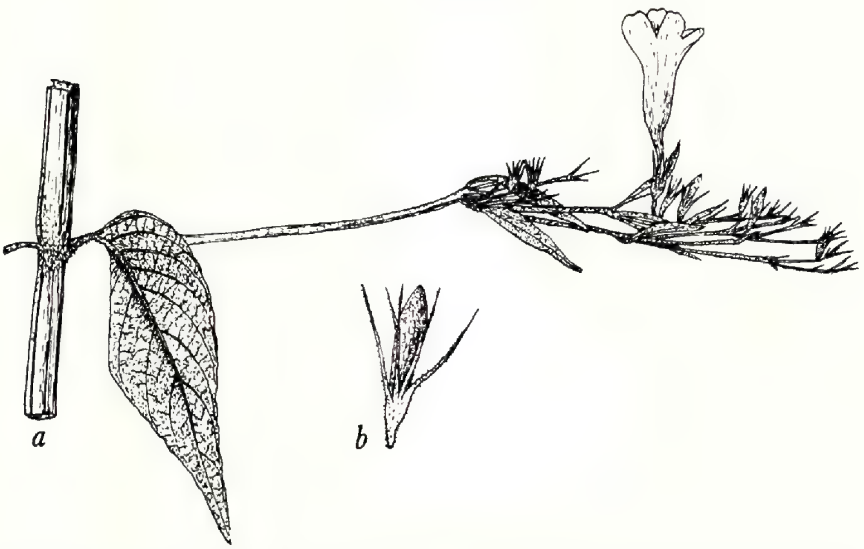

FIG. 5. *Ruellia Matudae* Leonard. Type, *Matuda 1966*, in the University of Michigan Herbarium. a, portion of plant, half natural size; b, calyx and unexpanded corolla, twice natural size.

lent, the hairs curved, the angles winged. Leaf blades (uppermost) lanceolate, up to 6 cm. long and 3.5 cm. wide, gradually narrowed to a blunt tip, rounded at base, entire or undulate, densely puberulent (the hairs curved), the costa and lateral veins (usually 6 pairs) prominent; petioles about 5 mm. long, puberulent, the hairs curved. Flowers erect, secund, borne in axillary, spreading, peduncled, dichotomously branched panicles. Peduncles (up to 12 cm. long) and branches of panicle quadrangular, puberulent, the hairs curved; bracts subtending the peduncles similar to stem leaves but smaller, those subtending the flowers and branches of

the panicle linear, 5 to 25 mm. long, all puberulent. Calyx 1 cm. long, puberulent (hairs spreading), the segments subulate, unequal, 7 to 9 mm. long. Corolla 4 cm. long, red or reddish purple, minutely and sparingly pubescent, narrowly salverform, 1.5 mm. in diameter at base, 7 mm. at mouth, the limb about 2 cm. broad, the lobes obovate, emarginate. Ovary puberulent; capsule not seen.

MEXICO: Chiapas, San Nícolas near Montecristo, January, 1938, *Eizi Matuda 1966* (type in the University of Michigan Herbarium; duplicate in the U.S. National Herbarium, No. 1,746,631).

Related to *R. stemonacanthoides* (Oerst.) Hemsl., but amply distinct in the winged stems, densely puberulent leaves, and red corollas.

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